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ABSTRACT

This workshop, designed for Chapter 1 compensatory education teachers, administrators, and staff, offers alternatives to the widespread use of worksheets. Four strategies for alternative classroom methods are explored: cooperative learning, peer tutoring, reciprocal teaching, and theme-based instruction. The following elements are included in the workshop package: a presenter's guide, a transparency set, a handout set, and an annotated bibliography. The presenter's guide provides a text that can be used as a framework for all workshop materials. It includes cues for using the transparencies and handouts and suggests prompts for participant activities. Approximate workshop presentation time is 1.75 hours. (LL)

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BEYOND WORKSHEETS

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GOAL OF THE WORKSHOP:

To improve the quality of Chapter 1 instruction by sharing information about educational activities that go beyond worksheets.

"Until recently, a conventional wisdom about effective practice in (Chapter 1) settings has emphasized the remediation of learners' deficits, a curriculum broken down into discrete skills, teacher-directed instruction, a uniform approach to classroom management, and the grouping of students by ability."

from:
Better Schooling for the Children of Poverty:
Alternatives to Conventional Wisdom
U.S. Department of Education Office of Planning, Budget and
Evaluation, January 1990

Conventional Wisdom	Alternatives to Conventional Wisdom
An emphasis on learners' deficits	An emphasis on the knowledge students do bring to school
	Explicit teaching of how to function in the "culture" of the school

from:
Better Schooling for the Children of Poverty:
Alternatives to Conventional Wisdom
U.S. Department of Education Office of Planning, Budget and Evaluation, January 1990

Conventional Wisdom	Alternatives to Conventional Wisdom
Discrete skills	Early emphasis on "higher order" tasks Extensive opportunities to learn and apply skills in context An emphasis on meaning and understanding in all academic instruction

from:
Better Schooling for the Children of Poverty:
Alternatives to Conventional Wisdom
U.S. Department of Education Office of Planning, Budget and Evaluation, January 1990

Conventional Wisdom	Alternatives to Conventional Wisdom
Teacher-directed instruction	Teacher-directed and learner-directed instruction
Uniform classroom management	Variation in classroom management approaches
Long-term grouping of students by achievement or ability	Grouping arrangements that mix ability levels More flexibility in grouping arrangements

from:
Better Schooling for the Children of Poverty:
Alternatives to Conventional Wisdom
U.S. Department of Education Office of Planning, Budget and Evaluation, January 1990

EXTENT OF WORKSHEET USE

- **300-400 hours per year in language arts classes**
- **Approximately 1,000 workbook pages and skill sheets per year**
- **30-60% of the time allocated to reading**

"...emphasis on seat time as opposed to competency,...is one of the things that push at-risk students out of school."

(from Goodlad's A Place Called School)

Limitations of worksheets:

- Chapter 1 seatwork less stimulating
- Chapter 1 worksheets unrelated to regular class lesson
- Passive learning style encouraged
- No divergent questions that develop higher order thinking skills.

HOW CAN A TEACHER MOVE BEYOND WORKSHEETS?

STUDENTS WORKING TOGETHER

- Cooperative Learning
- Reciprocal Teaching
- Peer Tutoring

PROJECTS THAT LAST MORE THAN ONE PERIOD

- Extended Projects
- Theme-based instruction

ADVANTAGES OF COOPERATIVE GROUPWORK

HIGHER ACHIEVEMENT LEVELS

MORE OPPORTUNITIES FOR SOCIAL AND RACIAL INTEGRATION

MORE SUPPORTIVE LEARNING ENVIRONMENT

MORE ACCEPTANCE OF ACADEMICALLY HANDICAPPED STUDENTS

OUTCOMES OF COOPERATIVE GROUPWORK

HIGHER LEVELS OF :

- TIME ON TASK
- SELF-ESTEEM
- COOPERATION
- INDEPENDENCE
- PROBLEM-SOLVING BEHAVIOR
- CONTENT RETENTION
- ATTENDANCE
- SELF-DIRECTION

EXAMPLE 1: Student Team Learning (Slavin)

Assign students to mixed groups of five.

After lesson, students complete the assignment as a group.

Students discussing lesson in a group, quiz each other in pairs.

Each student tested individually.

Each student's contribution to the team score=improvement over past average.

EXAMPLE 2: Jigsaw

Heterogeneous teams of three to five students

Teacher presents a lesson.

Students read a chapter or a unit.

Each student is designated as an "expert" on one aspect of the lesson.

Experts in each area meet in "expert groups", discuss their part of the topic in depth.

Experts return to their teams, taking turns explaining their area of expertise to their team members.

Individual scores are based on quiz on all aspects of lesson.

Team scores are based on individual improvement over their past average.

EXAMPLE 3: Pairing

Students are put into pairs.

Students take turns reading to each other,
predicting story endings,
summarizing stories,
responding to questions made up by their partners;
practicing spelling, reading and vocabulary.

Students can work in pairs for writing assignments, writing drafts, revising and editing each other's work and publishing team books.

EXAMPLE 4: *Team-Assisted Individualization*

Students take a placement test to determine level.

Worksheets provided for every level

Students work at their own pace. Teammates check each other's work using answer sheets.

Final test for each unit is scored by a student monitor.

Each student contributes to the team score by number of units mastered each week.

EXAMPLE 5: Teams-Games-Tournaments

The teacher delivers instruction to the class as usual.

Students divided into mixed-ability teams.

Students with similar levels of past performance represent their teams in a weekly tournament.

Tournament is composed of a series of games.

At each game, three students with similar levels of past performance, each from different teams, compete, using a list of questions based on the academic material they have studied.

SOCIAL SKILLS REQUIRED FOR COOPERATIVE GROUPWORK

TASK SKILLS

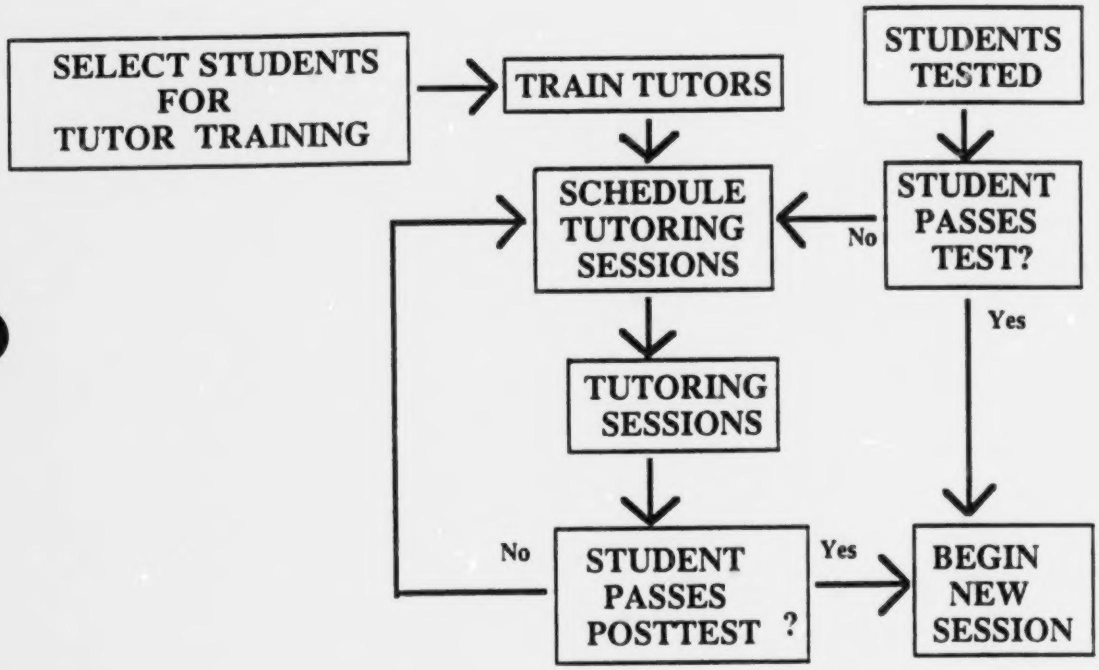
- Agenda management
- Giving and receiving ideas

SOCIAL OR MAINTENANCE SKILLS

- Encouraging and appreciating
- Guiding group process

(Kagan, 1989)

DETERLINE'S SYSTEM APPROACH TUTORING FLOWCHART



SELECT STUDENTS FOR TUTOR TRAINING

TRAIN TUTORS

STUDENTS TESTED

SCHEDULE TUTORING SESSIONS

STUDENT PASSES TEST?

TUTORING SESSIONS

STUDENT PASSES POSTTEST ?

BEGIN NEW SESSION

(Adapted from Ehly, Stewart. 1977
Peer Tutorial Models)

RECIPROCAL TEACHING STRATEGIES

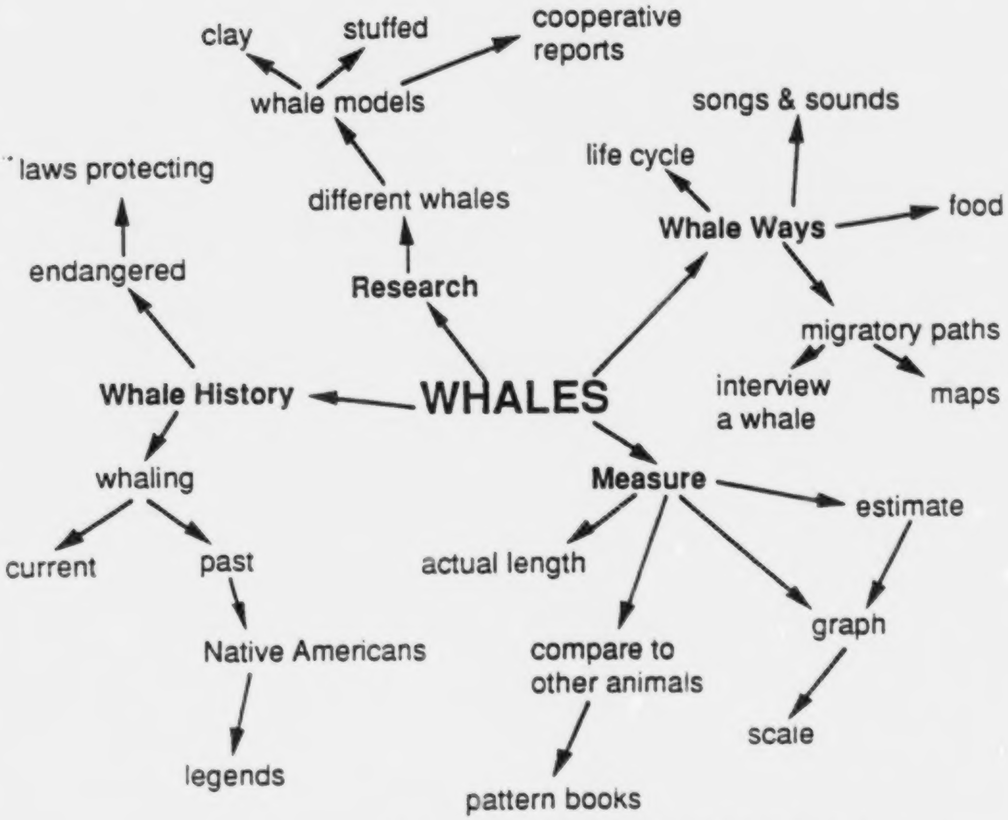
Summarizing

Generating questions

Predicting

Clarifying

WEBBING EXAMPLE



clay

stuffed

cooperative reports

whale models

songs & sounds

life cycle

laws protecting

different whales

Whale Ways

food

endangered

Research

migratory paths

Whale History

WHALES

interview a whale

maps

whaling

Measure

estimate

current

past

actual length

graph

Native Americans

compare to other animals

scale

legends

pattern books

(adapted from Griswold, 1987, Whale Lesson)

Beyond Worksheets

Presenter's Guide

This workshop is designed for Chapter 1 compensatory education teachers, administrators and staff. It was developed by the Regions 6 and 7 Rural Technical Assistance Centers at Northwest Regional Educational Laboratory.

The following elements are included in the workshop package:

Presenter's Guide
Transparency Set
Handout set
Annotated bibliography

This presenter's guide provides a text that can be used as a framework for all the workshop materials. It includes cues for using the transparencies and handouts. It also suggests prompts for the participant activities.

Approximate workshop presentation time is one hour and forty-five minutes.

A list of transparencies and handouts for participants is included at the end of this guide.

Overhead 1, Handout 1: Title transparency

Introduce yourself and try to get a sense of the participants' level of interest in alternative instructional practices. Poll the room informally, asking for a show of hands to indicate the roles participants play (teacher, paraprofessional, administrator) the length of time they have been involved in compensatory education programs and the extent to which they've used worksheets. Use the terms "skillsheets" and "seatwork" as prompts if you sense that they are not familiar with the term "worksheet".

"Can I have a show of hands, how many of you would say that you use worksheets occassionally? How many would say that you use worksheets fairly often? And how many would say that you use worksheets a lot?"

Overhead 2, Handout 2: Goal of the workshop

"The overall goal of this workshop is to improve the quality of Chapter 1 instruction by sharing information about educational activities that go beyond worksheets. We will do this by exploring instructional practices that can be used in place of worksheets in the context of Chapter 1 instruction."

"Let's start by talking about the traditional approach to compensatory education."

Overhead 3, Handout 3: Conventional Wisdom ("Until recently...")

"The traditional view of compensatory education emphasized breaking down instructional material into discrete, simple skills. These skills are then taught through repetitive drill. Other features of the traditional view of compensatory education are the strict long-term grouping of students by ability level and complete reliance on teacher-directed instruction."

"The use of worksheets falls neatly into this view of compensatory education. Worksheets are designed to allow for repetitive drill of fact recall and other discrete skills. They allow for a classroom management system controlled by the teacher and they give students something to do, freeing the teacher to work with other groups of students or attend to other tasks."

Overhead 4, Handout 4: Conventional Wisdom (Emphasis on learners' deficits)

"We have become aware that there is another way of looking at compensatory education, and the needs of disadvantaged learners. While the conventional wisdom emphasizes the learner's deficits and shortcomings, we know that even the most disadvantaged learners bring a wealth of knowledge and experience with them to school. In some cases it is knowledge and experience that is so different from ours that we have trouble fitting it into our educational framework."

"We have also come to understand that there are cultural issues that come into play when we work with disadvantaged learners. There are many norms and rules that we may take for granted that may be new for students who come from a different background. For some of these students, explicit instructions about how to function within the school's culture is needed. They have to be told what is expected in a way they can understand. For example, we may expect students to know that they'll need an organized notebook, while that may be something completely new to them. You have to tell them some things that you may take for granted: When we read, we read quietly, when someone else talks, we listen."

Overhead 5, Handout 4: Conventional Wisdom (Discrete skills)

"We're finding that constant repetitive drill is not always the best way to teach some skills. We're finding that you can get higher achievement results by drilling in basic skills, but have no impact on using these basics in application, in higher order skills (reasoning, analysis, problem solving, interpretation and decision-making.) This suggests a need to address these higher-order skills earlier, to give students a chance to apply what they learn in a real-world context, and to make sure that students understand the meaning of what they are learning."

Overhead 6, Handout 5: Conventional Wisdom (Teacher-directed instruction)

"Similarly, we have seen a need for some variation and balance between teacher directed and learner-directed instruction, changing classroom routines for different kinds of work, and flexibility in grouping arrangements: at times mixing students of different ability levels and changing ability groupings with more flexibility."

"Worksheets are helpful as a way to give students an opportunity for independent practice of a new skill. After a lesson is delivered by the teacher to the whole class, using a worksheet as a way to get students to consolidate that new skill makes sense."

"The problems come up when worksheets are used too much, or used for the wrong reasons. Worksheets are sometimes used a s a way to keep the student occupied. There are times when worksheets are given to students in place of direct instruction."

Overhead 7: Extent of worksheet use; Handout 6: Facts about worksheets

"How widely are worksheets used? We already saw from the show of hands that the use of worksheets is pretty extensive, at least in our experience. Worksheets can account for up to 400 hours of class time per year in language arts, in primary grades. About one thousand worksheets a year is one estimate of the volume of seatwork done by students, and this can take up to 60% of the allocated class time for reading."

"Given the sheer amount of time devoted to seatwork activities, we have to ask the question: Is this a good use of that instructional time? What is the effect of the extensive reliance of seatwork on achievement? There is some evidence that seatwork is not strongly correlated to increased achievement in reading."

Overhead 8: Goodlad quote

"Is there any relationship between extensive use of seatwork and student motivation? Goodlad, in the book A Place Called School, stated that "The emphasis on seat time as opposed to competence, which forces students to perform certain functions rather than achieve results is one of the things that push at-risk students out of school.""

Overhead 9: Limitations of worksheets

"How is the issue of seatwork use related to Chapter 1 instruction? One argument is that disadvantaged learners, since they have more ground to cover, need better instruction, and that more drilling, more circle-the-word exercises only slow students down and turn them off. They teach students that school work is boring. Chapter 1 students typically receive less stimulating, less interesting seatwork assignments. Students develop strategies for filling out the worksheets that result in correct answers, but require no understanding of the lesson. The workbook activities in Chapter 1 may be completely unrelated to the lesson going on in the regular class."

Handout 7: article: Successful Student Practice During Seatwork, Helmke and Schrader, 1988

Handout 8: article: Estimating the Cost of Seatwork, Jachym, Allington and Broikou, 1989

"You have in your packets two articles which I'd like to call to your attention. They are "Successful Student Practice During Seatwork", by Helmke and Schrader, and "Estimating the Cost of Seatwork" by Jachym, Allington and Broikou. The Helmke and Schrader article discusses the need for the teacher to prepare students for seatwork assignments and the students' need for monitoring while they are engaged in seatwork."

"The other article, "Estimating the Cost of Seatwork," discusses the hidden costs of seatwork. While many teachers look at worksheets as a low-cost instructional activity, once costs of paper, copying equipment and staff time for duplicating are taken into account, the costs can be surprisingly high."

"We know that there are problems associated with the overuse and the misuse of seatwork. Our purpose here today is to explore some of the alternatives to seatwork."

Overhead 10, Handout 9: "How can a teacher..."

"The alternatives I want to talk about today fall into two categories: having students work in groups and using assignments that extend beyond one class period. Both of these approaches can help you make links to the student's regular program."

"There are several different ways teachers can have students work in groups. We are going to ask for you to share some of your successful and unsuccessful experiences with students working in groups. We will also focus on cooperative groupwork, reciprocal teaching and peer tutoring."

"Another area we will explore is the idea of using projects that extend beyond one class period. Again, we will be working with ideas that you may have used in the past, in addition to using folders for class work, week-long instructional units, and using unifying themes for a wide array of instructional activities."

"The first alternative we are going to look at is **cooperative groupwork.**"

Overhead 11, Handout 10: Advantages of cooperative groupwork

"What are some of the advantages of having students work in cooperative groups? The advantages fall into two categories: effects on achievement, and social benefits."

"Most studies which compare cooperative learning with traditional classrooms show higher achievement levels for students in the cooperative learning groups. Not only does it help low-achieving students, but high-achieving students as well. One explanation for this is that the experience of explaining material to members of their groups helps higher achieving students consolidate their own knowledge and skills."

"Cooperative learning can be helpful in developing a school environment in which students support each other to do well in school. If you are on a cooperative team and your team score depends on how well another student does on a quiz, it is in your own best interest to see that the other student does all of her homework, shows up in class, pays attention to the teacher. Contrast this with the traditional competitive classroom model, in which the worse another student does, the better you do by comparison."

"One big problem with compensatory education programs is that they tend to be more socially and racially segregated than regular classes. The cooperative learning model offers a context for students of different races and social classes to interact as equals. Studies by Robert Slavin report an increase in interracial friendships in schools where cooperative education is used, and the extension of these friendships beyond the classroom."

Overhead 12: Outcomes of Cooperative Groupwork

"Slavin's research also indicated that there are some affective benefits associated with cooperative learning. He reports that students feel more successful, feel more liked by other students, like school more, have fewer contacts with police, and develop higher levels of self esteem when these methods are used."

"I'm sure that some of you have had experience using cooperative groups, or other kinds of groupwork, in the classroom. What I'd like to do now is have you break up into groups of three and follow the instructions on the sheet labelled Group Activity 1."

Handout 11 Group activity 1

This activity is designed to allow participants to share information about cooperative groupwork while modelling the format used in some cooperative group situations. Each participant chooses one cooperative groupwork method they have used and describes it on the sheet provided. In each group, one participant takes the role of recorder, making a record of the activities described. Another is designated as the time keeper, making sure each person has an equal amount of time to describe their practice. The third participant acts as a reporter, with the responsibility for informing the entire group of the activities described when the whole audience reconvenes.

Presenter facilitates a discussion of the instructional activities described by the participants, asking reporters from each group to describe the practices discussed. The five examples provided below can be omitted from the presentation if the examples generated in the group activity are sufficient to illustrate a variety of applications of the principles of cooperative learning to the Chapter 1 setting. In this case, the presenter should refer to Handouts 12 through 16 for the participants future reference.

"There are a number of ways to use cooperative groupwork. Let's talk about methods that can be used in Chapter 1 settings. The first example I'd like to talk about could be used in an in-class setting for reading instruction."

Overhead 13: Student Team Learning, Handout 12: Cooperative Groupwork, Examples I and II

"In this example, students are divided into groups of five, each group having students of high, moderate and low achievement."

"After a teacher-directed lesson, students complete the assignment as a group. They use whatever means they can agree upon to master the material: discussing it in a group, quizzing each other in pairs, and so on."

"At the end of the unit, each student is tested individually on the material. Each student's contribution to the team score is are based on how much they exceeded their past quiz average."

"The second example suggests ways cooperative groupwork can be applied to a subject area when there is some room for interpretation of the material, as in social studies or reading."

Overhead 14, Jigsaw

Handout 12: Cooperative Groupwork, Example I and II

"You may already be familiar with this form of Jigsaw group activity. Teams of three to five students are formed, each team including students of varying ability. The teacher presents a lesson, following which all students are given a chapter or a unit to read."

"Each student is designated as an "expert" on one aspect of the lesson. Experts in each area from all teams meet in "expert groups" to discuss their part of the topic in depth using worksheets that relate to that aspect of the reading. Students return to their teams, taking turns explaining their area of expertise to their team members. Individual scores are based on a quiz on all aspects of the lesson; team scores are based on individual improvement over their past average."

Overhead 15: Pairing

Handout 13: Cooperative Groupwork, Example III, IV and V

"In our third example, students in each pair take turns reading to each other, predicting story endings, summarizing stories, responding to questions made up by their partners, practicing spelling, reading, and vocabulary."

"Students can work in pairs for writing assignments, writing drafts, revising and editing each other's work and publishing team books."

Overhead 16: Team-assisted individualization

Handout 13: Cooperative Groupwork, Example III, IV and V

"There are methods of cooperative learning that can be applied to mathematics instruction, too. The Team Assisted Individualization approach requires either the use of pre-packaged materials or extensive preparation on the part of the teacher. Students take a placement test that determines their level. Worksheets are provided for every level and students work at their own pace."

"Teammates check each other's work using answer sheets. The final test for each unit is scored by a student monitor. Each student contributes to the team score by the number of units mastered each week."

"This method is suited to mathematics, since many concepts depend on an understanding of earlier ones. It allows students to proceed at their own pace, avoiding boredom. With students performing the functions of managing materials and checking work, the teacher is free to work with individual students or small groups. This model can also be used in an in-class setting."

Overhead 17: Teams-Games-Tournaments

Handout 13: Cooperative Groupwork, Example III, IV and V

"Our final example illustrates cooperative learning in an in-class setting for mathematics instruction. The teacher delivers instruction to the class as usual. Teams are composed of students of varying ability. Every week, a tournament is held. The tournament is composed of a series of games. At each game, three students with similar levels of past performance, each from different teams, compete, using a list of questions based on the academic material they have studied. This model allows students to move from one achievement level to another, based on their performance in the tournament."

"Each of the examples we've covered can be applied to Chapter 1 instruction, in either pull-out or in-class settings. To apply the first example to an in-class setting, the Chapter 1 teacher or educational assistant would help groups to which Chapter 1 students are assigned, paying particular attention to the needs of these students in the cooperative group."

"It is important to realize that cooperative learning methods are not a magic solution to all classroom problems. You cannot put students into groups, stand back and expect immediate results. Some teachers have reported disastrous results when they've attempted to use cooperative methods. In some cases, cooperative frameworks are introduced without any preparatory groundwork, and the results are so discouraging that the teacher assumes that "cooperative learning cannot work with my class."

"It makes sense that both students and teachers need some time and training to get used to cooperative methods. For years they've been rewarded for competing with each other- to be first with the right answer, to get higher grades than the other students. Suddenly they're asked to help the competition. Can they trust each other? Can they trust the teacher? Is the teacher still looking for that high-achieving student that can "beat" the competition? It's no wonder cooperative methods fail when the students are not adequately prepared to use them."

"How can teachers prepare students to work in cooperative groups? Let's consider the skills students need to work together."

Overhead 18: Social skills required for cooperative groupwork

Handout 14: Social skills required for cooperative groupwork

(Presenter should refer to this list, pick a few examples of the necessary social skills, and illustrate their need and how they might be taught. Do not read the entire list.)

TASK SKILLS

1. Agenda management
    - Setting an agenda
    - Sticking to an agenda
    - Managing time
    - Revising an agenda
    - Summarizing progress

2. Giving and receiving ideas
    - Setting an open atmosphere
    - Brainstorming
    - Forming a wish list
    - Communications skills
    - Active listening / Paraphrasing
    - Relating to ideas, reactions of others
    - Asking for clarification
    - Maintaining eye contact
    - Conflict resolution
    - Checking for consensus
    - Seeking basics for lack of consensus
    - Expressing disagreement constructively
    - Polite, proactive disagreement
    - Seeking the higher level synthesis
    - Building on the best ideas
    - Evaluation of ideas
    - Analysis and synthesis

SOCIAL OR MAINTENANCE SKILLS

3. Encouraging and appreciating
    - Seeking participation by all
    - Processing feelings and attitudes
    - Appreciating individual differences

4. Guiding group process
    - Checking (for understanding, agreement, disagreement, participation)
    - Creating and assigning group roles and responsibilities (agenda keeper, secretary, appreciator, checkor)

(Kagan, 1989)

"This list is from a book by Spencer Kagan called Cooperative Learning: Resources for Teachers."

(Discuss some of the listed skills.)

"As you can see, the process of working cooperatively requires a number of skills, many of which will be new to students in this context. The point is that we can't expect students who have never used these skills in a classroom context to suddenly be able to do so. To use cooperative methods successfully, a teacher must explain these skills to students, model them in their own behavior, and give the students opportunities to rehearse these skills. One idea you might want to use for your first cooperative activity is training in cooperative group skills."

"When using a cooperative groupwork approach in Chapter 1 classes, it is important to remember that the purpose of Chapter 1 is not to supplant, or replace the regular education program, but to supplement it. Chapter 1 funds must be used to provide services to Chapter 1 students. This can be done either directly or indirectly. In our first example, we noted that the Chapter 1 teacher could take over the functions of the regular class teacher, freeing the regular teacher to work with the Chapter 1 students."

"Another way of getting students to work together is **peer tutoring**."

"Peer tutoring is a process in which students work together in a one-to-one setting. The tutors may be a volunteers, may be paid, of may receive academic credit for their services. The tutor presents learning tasks, reinforces material already taught, provides immediate corrective feedback, models correct responses to the tutee, and gives the tutee clues for finding the correct answer."

"Peer tutoring has several advantages. Students with special educational needs receive additional one-to-one attention from their tutors. They enjoy the shared social experience of the tutoring sessions. The student in a peer tutoring program often shows an improvement in self-esteem and work attitudes and decreased disruptive behavior. Peer tutoring can reduce the stigma associated with special academic needs and provide a new opportunity for peer friendships. The tutor benefits from the process as well, operating in a meaningful social role the tutor develops responsibility, as well as a chance to consolidate their own knowledge. (Holder, Barbara, 1982)"

"Peers have the advantage of using a common language, making content easier for the tutee to understand."

Overhead 19: Deterline's System Approach Tutoring Flowchart

Handout 15: Deterline's System Approach Tutoring Flowchart

"Handout 15 shows the process of peer tutoring in flowchart form. Students are selected for tutoring on the basis of a test. This test can be one that was administered for another purpose- there is no real need to set up an additional test just for this purpose. In the case of Chapter 1 students, we can consider the selection process used for selecting Chapter 1 students as the test in this example. Students are selected to be tutors, and then trained. Tutoring sessions are scheduled, and, at some point, a posttest is given. On the basis of this posttest, students either continue in tutoring or exit the program."

"What are some of the considerations for choosing student peer tutors? For Chapter 1 classes, using tutors from the Chapter 1 students' regular class can be helpful. Isolation of the basic skills taught in Chapter 1 from the work done in the regular class can result in a fragmentation of learning for the Chapter 1 student. Use of students from the regular class can help integrate the learning that occurs in the two classes. The social interaction in the tutoring environment can help reduce the social and racial segregation present in many Chapter 1 programs and lead to more acceptance across racial and social groups."

"How can peer tutoring be incorporated into the school routine? It can be one of the optional activities available at a learning center. It can be used during free time periods, before school, after school, of after a designated task is completed. You may also wish to select a time during which the whole class works in tutoring teams."

"Teachers who want to use peer tutoring need administrative support for the program to work. It is important to involve school administrators in the process of setting up a peer tutoring program as early as possible. It is also helpful to involve other teachers, especially if you plan to involve a large number of students. If you plan to have a very large peer tutoring program, you may want to consider having the administration of this program under the formal control of one staff member."

"Peer tutoring is especially important to rural schools. Students in rural schools typically have fewer individuals with whom to interact in educational settings. The opportunity to have a structured educational interaction with a peer takes on greater importance."

"Nebraska has the largest number of one-teacher schools in the nation. In a survey of the one-teacher schools in this state, it was found that 46% use some type of tutoring by students.(Devin-Sheean, Linda. Allen, Vernon L. 1975)"

Overhead 4: Conventional Wisdom II

Handout 4: Conventional Wisdom II

"When we looked at the list of alternatives to the conventional wisdom about compensatory education earlier, the first idea we talked about was a need to emphasize the knowledge students bring to school, rather than emphasizing what they do not know. Some researchers (Crushon, Ilena, 1977) have suggested that the use of peer tutoring is an effective way of using the cultural strengths Black students bring to school."

"The traditional African extended family structure survives in African-American culture. Older brothers and sisters take on quasi-parental roles in supervision and care of younger siblings. Peer tutoring programs in schools with Black students can incorporate this cultural value, giving tutors a valued social role."

"Another effective instructional practice that can be used is **reciprocal teaching.**"

Overhead 20: Reciprocal teaching strategies

"Reciprocal teaching is an instructional technique in which the teacher models the use of four comprehension strategies in the process of reading text: summarizing, question generation, clarification and prediction. Students gradually are given the role of using these strategies themselves under the teacher's guidance."

"Studies on reciprocal teaching indicate that this method is more effective in teaching strategies of summarizing, question generation, clarification and prediction than the use of worksheets and simple teacher demonstration of the skills (Palincsar, 1984). It has also been shown to be effective in improving accuracy in fact recall and interpretation in independent student reading (Palincsar, 1987). For students with poor reading comprehension but good word recognition skills, reciprocal teaching methods had a significant positive effect on students' achievement scores."

"Reciprocal teaching allows students to become more actively involved in instruction, incorporate new skills and to take on more responsibility for their own learning. A scaffolding process occurs, in which the teacher provides an opportunity for the student to extend their current skills to a higher level."

"Handout 16, Sample Reciprocal Teaching Dialog, shows how this process works."

Handout 16: Sample Reciprocal Teaching Dialog

"Before reading the story: Genius With Feathers, the teacher speculates aloud about what the story will be about, on the basis of the title. The teacher and the class read part of the story, and the teacher then models a check on her prediction. She models a summary of what was read and predicts what will come next."

"The teacher then selects a student to be the "teacher" for the next segment of reading. This student leads the next discussion, with the teacher supplying corrective feedback."

"The examples which follow in your handouts illustrate the acquisition of question-asking skills by two students."

"Two other alternatives to worksheets are the use of projects that extend beyond one class period and theme-based instruction."

Overhead 4: Conventional wisdom II

"One of the ideas we discussed earlier is the way that compensatory education tends to teach isolated facts, basic skills without always emphasizing the context and meaning of these skills. Using extended projects and theme-based instruction are two ways of relating assignments to the big picture, and combining learning across subject areas in a meaningful way. There is a theory that the degree to which new information is learned is dependent on the congruency of ideas that is achieved between the teacher and the learner. Use of themes in learning can help students fit what they are learning into their own framework, making it more congruent with their world."

"Use of extended projects and themes helps students organize information, and helps make connections between new concepts and things that they already know. This enhances the overall coherence of the body of information given to the student-making it all "hang together" better."

Overhead 21: Webbing Example

Handout 17: Webbing Example

"One way of explaining the usefulness of projects and themes in instruction is the concept of "webbing." Working outward from the central concept of a lesson, links are made to related ideas. This helps to integrate different areas of the curriculum, allow for individual interests, and increases the teacher's ability to incorporate isolated subject areas. In this example, students studying whales in a science class get a chance to reinforce their learning from a math class, measuring the length of whales, estimating their size, graphing their weights. Historical information about whales is connected historical information about Native Americans. Having many different ways to think, learn and remember information improves students' recall of facts."

"Teachers report that the use of themes increases students' motivation to master material, and that students taught with theme-based instruction produce more sustained writing about instructional subjects."

"Teachers can further enhance the level of student motivation through the use of themes that are relevant to the students' lives. These themes can include elements of the students' cultural background, as well as areas in which the student is already interested."

"An advantage of the project approach to instruction is that the teacher can allow for the students to choose the mode of presentation. The use of oral presentations, photographic essays, poems, videotapes and stories can stimulate new interest in the instructional material and permit the student to interact with the subject in their preferred modality: visual, auditory or kinesthetic."

Handout 18: Boynton Stream Project

"The Boynton Stream Project is a good example of the use of the project approach. Josephine Cardamone, the Chapter 1 teacher at Ithaca High School in Ithaca, New York, was teaching a unit on ecology. She posted a world map in the classroom. Students were asked to look for articles about ecological problems throughout the world, and these articles were posted on the map near the area they occurred. Students made graphs of declining populations of endangered species of wildlife, and played environmental games. These activities allowed them to integrate skills they learned in geography, science and mathematics in a meaningful way."

"As a culmination to this unit, the class studied a stream that ran past the school building. They identified plants and animals in and near the stream. They drew pictures of the plants and animals, preserved plants with a plant press, made silhouettes of the plants using sun paper and wrote guided imagery passages from the point of view of animals during a storm. One student made a list of all the common and scientific names of the plants. Another drew a map of the stream. All of these efforts were combined in one finished product, a book."

"Theme and project-based instruction work well in cooperative learning models. The small group environment encourages active participation on the part of students who have a pattern of passive participation in instruction."

"The thematic approach works best when the theme is the teacher's choice. If a theme is based on the teacher's interests, values and experience, it engages the teacher's fullest creative energies."

"In this workshop we've discussed classroom activities that can be used in Chapter 1 classes as alternatives to using worksheets. It is important to remember that there is no reason to stop all use of worksheets immediately and to implement use of cooperative learning in all classes all of the time. That is not what we are suggesting. If a teacher uses worksheets with a sensitivity to the issues we discussed earlier and with careful monitoring, they can be an effective way of giving students a chance to consolidate new knowledge and rehearse new skills."

"The alternate methods we talked about today take time to get used to. It is not unreasonable to expect a full nine week term to pass before everyone is comfortable with a cooperative learning format. These ideas can be introduced gradually, or on an occasional basis. For example, you can plan to have one cooperative activity per week, or do a theme-based project once a month. It is important to use these techniques in a way that does not disrupt the classroom, and in a way that is comfortable for the teacher."

Transparencies

Overhead 1	Title: Beyond Worksheets
Overhead 2	Goal of the workshop
Overhead 3	Conventional Wisdom ("Until recently...")
Overhead 4	Conventional Wisdom (Emphasis on learners' deficits
Overhead 5	Conventional Wisdom (Discrete skills)
Overhead 6	Conventional Wisdom (Teacher-directed instruction)
Overhead 7	Extent of worksheet use
Overhead 8	Goodlad quote
Overhead 9	Limitations of worksheets
Overhead 10	How can a teacher move beyond worksheets?
Overhead 11	Advantages of cooperative groupwork
Overhead 12	Outcomes of cooperative groupwork
Overhead 13	Student team learning
Overhead 14	Jigsaw
Overhead 15	Pairing
Overhead 16	Team assisted individualization
Overhead 17	Teams-Games-Tournaments
Overhead 18	Social skills required for cooperative groupwork
Overhead 19	Deterline's System Approach Tutoring Flowchart
Overhead 20	Reciprocal teaching strategies
Overhead 21	Webbing Example

Handouts for participants

Handout 1	Title: Beyond Worksheets
Handout 2	Goal of the workshop
Handout 3	Conventional wisdom I- "Until recently..."
Handout 4	Conventional wisdom II
Handout 5	Conventional wisdom III
Handout 6	Facts about worksheets
Handout 7	article: Successful Student Practice During Seatwork, Helmke and Schrader, 1988
Handout 8	article: Estimating the Cost of Seatwork, Jachym, Allington and Broikou, 1989
Handout 9	"How can a teacher..."
Handout 10	Advantages of Cooperative Groupwork
Handout 11	Group activity 1
Handout 12	Cooperative groupwork, Examples I and II
Handout 13	Cooperative groupwork, Examples III, IV and V
Handout 14	Social Skills required for cooperative groupwork
Handout 15	Deterline's System Approach Tutoring Flowchart
Handout 16	Sample Reciprocal Teaching Dialog
Handout 17	Webbing Example
Handout 18	Boynton Stream Project

BEYOND WORKSHEETS

70 71
56
93
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82,
66,
110

GOAL OF THE WORKSHOP:

To improve the quality of Chapter 1 instruction by sharing information about educational activities that go beyond worksheets.

"Until recently, a conventional wisdom about effective practice in (Chapter 1) settings has emphasized the remediation of learners' deficits, a curriculum broken down into discrete skills, teacher-directed instruction, a uniform approach to classroom management, and the grouping of students by ability."

from:
Better Schooling for the Children of Poverty:
Alternatives to Conventional Wisdom
U.S. Department of Education Office of Planning, Budget and
Evaluation, January 1990

Conventional Wisdom

An emphasis on learners' deficits-that is, what the "disadvantaged" student lacks in knowledge, intellectual facility, or experience

Curriculum that teaches discrete skills in a fixed sequence from "basic" to "higher order" skills

Alternatives to Conventional Wisdom

An emphasis on the knowledge students do bring to school

Explicit teaching of how to function in the "culture" of the school

Early emphasis on "higher order" tasks

Extensive opportunities to learn and apply skills in context

An emphasis on meaning and understanding in all academic instruction

from:
Better Schooling for the Children of Poverty:
Alternatives to Conventional Wisdom
U.S. Department of Education Office of Planning, Budget and Evaluation, January 1990

Conventional Wisdom	Alternatives to Conventional Wisdom
Exclusive or heavy reliance on teacher-directed instruction	**A combination of teacher-directed and learner-directed instruction**
Classroom management principles uniformly applied across the school day so as to forestall disorder in the classroom	**Variation in classroom management approaches depending on the kind of academic work being done**
Long-term grouping of students by achievement or ability	**Some use of grouping arrangements that mix ability levels**
	More flexibility in grouping arrangements

Extent of worksheet use

- Primary age students spend 300-400 hours per year doing seatwork in language arts classes.
- Students do approximately 1,000 workbook pages and skill sheets per year. (Anderson, Hiebert, Scott and Wilkinson, 1985)
- Students spend 30-60% of their time allocated to reading doing seatwork.

"The emphasis on seat time as opposed to competency, which forces students to perform certain functions rather than achieve results is one of the things that things that push at-risk students out of school." (from Goodlad's A Place Called School)

Limitations of worksheets:

- Seatwork can cost from $30 to $100 per student annually, including cost of paper, ink, salaries of staff who duplicate, copying equipment and electricity.
- Teacher directions do not usually state what will be learned or how it is related to other instruction.
- Chapter 1 students typically receive less stimulating, less interesting seatwork assignments, and use strategies that do not require understanding of the material.
- Chapter 1 workbook activities are often unrelated to the reading lesson in the regular class.
- Most worksheets encourage a passive learning style.
- A student having trouble with a worksheet may continue to make errors until the teacher is available.
- Worksheets tend to feature convergent questions with only one correct answer, rather than divergent questions that develop higher order thinking skills.

Article: Successful Student Practice During Seatwork. Helmke and Schrader, 1988

Successful Student Practice During Seatwork: Efficient Management and Active Supervision Not Enough

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ABSTRACT **This study investigated the impact of student practice during seatwork on classroom achievement. Fifth-grade mathematics instruction was observed in 39 classrooms using a low-inference observation system, and math achievement was measured at the beginning and at the end of the fifth grade. The results showed that frequency of practice in itself was not related to achievement. However, other conditions influenced the effectiveness of student practice. The organization of seatwork by more successful teachers was characterized by (a) sufficient preparation, (b) efficient management, and (c) high intensity of active supervision that supported and corrected students in a *discreet* manner. Diagnostically competent teachers were particularly successful in supporting students during seatwork. The implications of this pattern of results for instructional practice are discussed.**

Practice has always been considered an essential part of learning in school. This idea is reflected by the important role attributed to various forms of student practice during regular classroom instruction in theories on school learning (Ausubel, 1968), as well as in recent conceptualizations of teaching functions (Burns, 1984; Rosenshine & Stevens, 1986). The main functions of practice are the consolidation of newly acquired knowledge and skills, and the increased automatization in the use of the skills. A certain level of automaticity is regarded as an important prerequisite for further learning because it provides the learner with more attentional capacity for learning new skills or for applying the skills to new situations and tasks. The consolidation of acquired skills is particularly important for both slower and younger learners as well as for highly structured subjects (such as mathematics).

Despite the time-honored importance attributed to practice in school learning, there are few empirical investigations dealing with this topic. Whereas numerous studies have dealt with conditions of efficient practice and drill in laboratory settings with relatively artificial tasks, comparatively little is known about conditions of effective student practice in the context of regular classroom instruction. This lack of research may be due to the predominant interest in teacher-student interaction rather than in seatwork, which is typically characterized by a high proportion of monitoring (Doyle, 1986). As a consequence, recommendations on how to organize student practice during seatwork (as given by Rosenshine & Stevens, 1986), though undoubtedly plausible, rest on a weak empirical foundation.

The present study provides an empirical analysis of independent practice, one of two forms of student practice described by Rosenshine and Stevens (1986). The other form is guided practice. Independent practice normally occurs during individual seatwork when students are assigned to work independently (usually on written exercises) at their desks with their own materials. Existing research suggests that effective independent practice can be characterized by the following conditions.

First, effective teachers have set up well-established norms and routines for the classroom that ensure *effective management* during seatwork. The teachers monitor the class thoroughly and intervene immediately in the case of disruptions (Brophy, 1983; & Doyle, 1986). These teachers are therefore interrupted comparatively less often by disciplinary problems and the need for organizational activities during seatwork.

Second, sufficient *preparation* of seatwork by previous lecturing or guided practice also appears critical. For example, Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw (1978) demonstrated that student er-

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ror rates were particularly high in classes in which teachers had to give lengthy explanations during seatwork. The necessity to reexplain was interpreted by the authors as "a signal that changes are needed in the student's instructional program, either in the difficulty of the assignment or in preparation for seatwork" (p. 21). However, Emmer, Evertson, Sanford, & Clements (1982) failed to show that the instruction of less effective classroom managers was characterized by a higher frequency of interruptions during seatwork.

Third, *intensive supervision* during seatwork underscores the active role of effective teachers. These teachers move around, interact with students, and inspect students' work frequently (Doyle, 1984; Emmer, Evertson, & Anderson, 1980; Emmer, Evertson, Sanford, & Clements, 1982; Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1978).

Finally, successful teachers' *contacts with students* are usually not longer than 30 seconds (e.g., Evertson, Anderson, Anderson, & Brophy, 1980). Rosenshine and Stevens (1986) give two reasons for this occurrence. First, longer contact between the student and teacher implies that the initial explanation was not clear. Second, spending more time with one student means less available time for monitoring and helping other students.

The purpose of the present study is to expand the existing body of research on the effectiveness of student practice in the classroom, as well as to support some findings of the previously cited studies of teacher preparation and classroom discipline. With regard to the role of teachers' contacts with students during seatwork, we believe that two aspects of this behavior have been overlooked: first, the mode of teachers' interaction with students (discreetly versus openly) and, second, the role of teachers' diagnostic competence.

In our view, if teacher comments, feedback, questions, and cues addressed to single students during seatwork phases are given in a discreet, confidential manner, a situation will be significantly different than if the teacher interacts in an indiscreet and public manner so that his/her statements can be heard by the other students. We assume that the latter situation impairs achievement because it represents an interruption of the practice phase and may disturb the course of seatwork. Therefore, in order to differentiate between the two different modes of teacher interaction with individual students during seatwork, one must go beyond the general notion of teacher *activity* during practice.

Furthermore, we believe that teacher diagnostic competency may play a crucial role in facilitating the identification of those students who need help as well as accurately diagnosing their learning problems and providing the appropriate support. From this point of view, excessive contact with individual students during seatwork might be due to the teacher's insufficient diagnostic knowledge base.

Method

Context. The current study is part of a comprehensive longitudinal research project conducted within the framework of the International Association for the Evaluation of Academic Achievement) (IEA) "Classroom Environment Study: Teaching for Learning" (Helmke, Schneider, & Weinert, 1986).

Sample. Thirty-nine fifth-grade classrooms from 24 German primary schools (Hauptschule) in the Munich area (Bavaria) participated in the study. (The Bavarian school system provides 4 years of general schooling. After that, the student population is divided into two tracks, depending upon their achievement level. On the average, the upper third attends the Gymnasium, whereas the other two thirds of the population attend the Hauptschule.)

The participating 39 teachers (19 men and 20 women) were the regular classroom and mathematics teachers for these classes. The teachers ranged from 25 to 59 years in age (median: 37 years) and from 3 to 27 years in professional experience (median: 12 years). An additional teacher survey study that compared crucial demographic and instructional variables of our 39 teachers with a random sample of 651 German math teachers showed no significant differences between these two groups.

Instruments. Two mathematics tests were developed to focus on elementary arithmetic procedures such as subtraction, division, etc. (Test A, 30 items) and word problems (Test B, 24 items). Test A concentrated on basic algorithmic skills, and Test B emphasized comprehension, problem solving, and application abilities. Items from both tests were combined into a total score (Cronbach's alpha = .94). Pretest and posttest scores were scaled as percentage correct. To ensure the content validity, both tests were developed particularly to cover the curriculum of fifth-grade classroom mathematics instruction. This curriculum was obligatory for mathematics teachers; only minor variations with regard to the sequence of the topics were permissible. In other words, the learning opportunities of the 39 classrooms were highly comparable, so there was no need to take into account factors such as "learning opportunity," "content covered," or the like.

The present analysis was faced with the problem of unequal classroom entry characteristics because it was based on a nonexperimental study. From the various methods discussed in the literature on measurement of change (see Corder-Bolz, 1978, for an overview of different statistical procedures), we regarded the *residualization* of posttest scores (i.e., the adjustment for pretest classroom differences in intelligence and mathematics achievement at the beginning of fifth grade) as the least problematic method. For reasons of clarity, a constant was added to the residualized posttest score of each class, namely, the average gain of the total sample (see Figure 1).

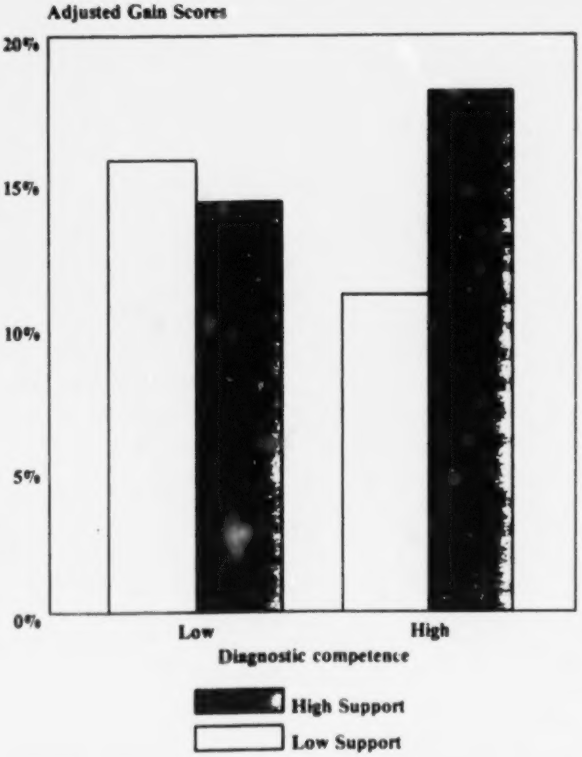

Figure 1.—Classroom Math Achievement Gain (Adjusted for Math Pretest) Depending on Teachers' Diagnostic Competence and the Frequency of Individual Supportive Activity During Seatwork

Teaching behaviors were assessed by using a low inference observational system (Five-Minute-Interaction-System) that represents a modification of Stalling's (1977) "Multiple-Coding-System." Observations took place during nine math lessons (five sequences per lesson, each lasting 5 minutes). The following aspects of classroom activities were recorded: (a) context, (b) persons participating in the interaction, and (c) content of interaction. Coding was based on a combined time and event sampling that allowed every new event to be coded. When the event lasted longer than 5 seconds, coding was repeated every 5 seconds.

Seatwork refers to an instructional context in which students work independently at written tasks and exercises. Duration of seatwork was measured as the relative frequency of all coded activities during seatwork as compared with the total number of all coded interactions. All of the other instructional variables represent proportions of the respective activities during seatwork as compared with the total number of coded interactions during seatwork.

Monitoring refers to supervision of students' work by the teacher without interacting with students. *Discreet support* comprises all subject-related teacher contacts with individual students during seatwork (e.g., diagnosing errors, giving remedial cues, demonstrating procedures, or answering students' questions) that are nonverbal or can be heard only in the direct vicinity of the addressed student. *Public interactions* comprise all teacher utterances directed to single students that are given indiscreetly and are consequently heard by the whole class. *Lecturing* refers to teacher presentation or explanation of academic material.

Recall questions are questions that require recall or recognition of factual information rather than higher level processing. *Disciplinary events* are all interactions dealing with student misbehavior. *Procedural activities* are all comments concerning nonacademic procedures and organizational activities.

Because previous studies have shown that classroom entry characteristics influence not only later achievement but also subsequent teacher behavior (Weinert & Helmke, 1987), all of the measures of teacher behavior were adjusted for classroom differences in math pretest achievement and intelligence. Thus, the correlations between teacher behaviors during seatwork and residualized posttest achievement are partial correlations rather than zero-order correlations.

Teachers' diagnostic competence was assessed by using a judgment-accuracy approach; for example, accuracy of teachers' judgments of their students' characteristics was taken as a measure of teachers' diagnostic competence. In this case, students' achievements in a mathematics test that contained content covered during the last 3 months of mathematics instruction served as the criterion against which accuracy of teachers' ratings was judged. Before making their judgments, teachers were given sufficient time to familiarize themselves with the test items by looking through the test booklet. After that, the teachers predicted for each student the number of test items they expected the students to solve.

Diagnostic competence was measured as the product-moment correlation (calculated separately for each teacher-respective class) between scores predicted for each student and the students' actual scores. This indicated the extent to which the teacher was able to predict the relative achievement position for each student of his or her class.

Results

Descriptive results. Table 1 contains the descriptive results of all variables included in this study. The results show that seatwork was an important part of instruction; on the average, about 20% of the whole lesson time was spent on this activity. Interestingly, substantial differences among teachers were found with respect to frequency of seatwork. Whereas some teachers used this didactic technique seldom (*Min* = 3.4, see Table 1),

Table 1.—Descriptive Statistics for All Variables Used in Study

Variable	*M*	*SD*	Min	Max
Adjusted achievement gain[a]	13.92	5.91	−4.32	26.09
Teacher diagnostic competence	0.63	0.19	0.03	0.89
Proportion of seatwork	21.87	11.95	3.42	53.22
Activities and events during seatwork				
Monitoring	43.50	18.84	14.05	91.43
Indicators of insufficient preparation				
Recall questions	2.84	1.97	0.46	8.11
Lecturing	2.77	2.24	0.00	9.96
Indicators of inefficient management				
Disciplinary events	1.53	1.39	0.00	6.96
Procedural activities	8.81	6.40	0.00	24.05
Teacher-student interactions				
Open, audible	30.33	15.56	8.57	59.73
Discreet, not audible	10.22	12.18	0.00	61.54

[a] Residualized classroom posttest scores plus a constant (mean gain of the total sample).

other teachers spent more than half of the instructional time on independent student practice in the context of seatwork. As seen in Table 1, the main proportion of teacher behavior during seatwork consisted of monitoring activities, characterized by a lack of interaction with the class as a whole or with single students.

Correlations with achievement. The data in Table 2 indicate that the frequency of independent seatwork was not significantly correlated with posttest math achievement. As indicated earlier, both teaching behaviors and posttest achievement were adjusted for classroom differences in cognitive entry characteristics.

In contrast to the nonsignificant correlation between the proportion of seatwork and classroom achievement, both indicators of inefficient management and insufficient preparation by the teacher were significantly negatively correlated with achievement. This result is in accordance with our hypotheses. Furthermore, for teachers' activity during seatwork, the overall activity score (indicating the frequency of all interactions with individual students) was not significantly related to achievement. However, the breaking down of this global score revealed two opposite effects: public teacher activities (such as probing, questioning, etc.) tended to have a (nonsignificant) negative effect, whereas *discreet* teacher contacts with individual students had a significant positive relationship with achievement.

Table 2.—Partial Correlations[a] of Seatwork-Related Teaching Behaviors With Achievement

Teaching behaviors	Achievement
Proportion of seatwork	−.11
Indicators of inefficient management	
Procedural activities	−.43**
Discipline problems	−.34**
Indicators of insufficient preparation	
Recall questions	−.32*
Lecturing	−.44**
Teacher activity during seatwork	
Total	.07
Public, audible	−.18
Discreet, not audible	.33*

[a] Both teaching behaviors and math posttest achievement were adjusted for classroom differences in prior achievement and intelligence.

*$p < 0.05$. **$p < 0.01$.

Effects of diagnostic competence. With regard to diagnostic competence, it should be noted that large differences between teachers were found (see Table 1). Some teachers were informed almost perfectly regarding their students' achievement level, whereas others were largely uninformed. To analyze the joint impact of diagnostic competence and frequency of teacher supportive contact on achievement, we carried out a two-factorial analysis of variance (with both independent variables dichotomized). The results indicated a weak main effect of supportive contact, $F(1, 28) = 3.47, p < .10$, whereas the main effect of diagnostic competence on achievement was insignificant, $F(1, 28) = 0.08$. A significant disordinal interaction between supportive contact and diagnostic competence also was found, $F(1, 28) = 7.31, p < .05$.

The interactive effect of individualized supportive contact and diagnostic competence on achievement is depicted in Figure 1. As can be seen, achievement was highest when both frequency of teachers' supportive contacts with students and their diagnostic competence were above average. A surprising partial result also deserves mention. Those classrooms with teachers who were good diagnosticians, yet who gave their students comparatively little support, showed pronounced achievement declines. In other words, a teacher with good diagnostic competence who provides insufficient support could discourage his or her students. Such students may become sensitized to their own weaknesses but do not receive sufficient support in overcoming these weaknesses.

Discussion

Initially, one should note that the interpretation of the data presented in this study was based solely on (partial) correlations. Thus, it is problematic to interpret teacher behavior (e.g., efficiency of management or sufficiency of preparation) as a *cause* and classroom achievement as an *effect*. However, for the present study there are two arguments that support a causal interpretation as suggested above. First, the temporal order of the variables was included in the analyses, because the observation of teachers (yielding scores for teacher management, instructional quality, etc.) started after the administration of the pretest (t_1) and was finished half a year before the posttest (t_2).

Second, by using partial correlations rather than zero-order correlations between teacher behaviors and classroom posttest achievement, we took into account classroom differences in the level of intelligence and prior knowledge.

As our results show, the mere quantity of seatwork is unrelated to academic success. That is, the amount of independent student practice in the context of seatwork has no impact on achievement. According to our data, it is not the quantity but the quality of independent student practice that makes a difference. The organization of independent student practice by less successful teachers (with regard to the achievement gain of their classroom) is characterized by frequent interruptions through lecturing and questions. This result coincides with the results reported by Fisher, Berliner, Filby, Marliave, Cahen, and Dishaw (1978) and illustrates that independent practice characterized by either insufficient preparation or inappropriate task difficulty level undermines achievement.

According to our study, the significant negative correlations between frequency of disciplinary events and procedural activities during seatwork on the one hand, and achievement on the other, underline the crucial role of classroom management for independent practice. This is in line with research on teacher effectiveness indicating the important role of classroom management for achievement (Doyle, 1986). Preventing and effectively handling discipline problems is one aspect; establishing a set routine for the students to follow during seatwork is another. In classes with a high percentage of procedural activities during seatwork, practice is often interrupted by technical and organizational activities, leading to a less concentrated work atmosphere. This indicates a lack of familiar and well-functioning rules of behavior, clarifying what the student should and should not do during certain phases of instruction. Disciplinary problems also are more common in such classrooms.

Furthermore, the breakdown of the total *activity* score into two separate components, discreet and open support, proved fruitful. Teacher statements (such as comment, feedback, correction, evaluation, etc.) given openly and obtrusively appear to deter achievement. Thus, discretion seems to be an essential prerequisite for effective teacher support. Two considerations might explain the important role ascribed to *discretion* in supportive contacts during seatwork. First, audible comments may disturb the concentration and the work progress of other students. Second, comments given openly may be experienced by the respective student (or expressed more poignantly: the victim) as an embarrassing exposure in front of the class. This, in turn, may have various negative motivational consequences, such as the impairment of students' motivation to learn or the deterioration of self-confidence.

Surprisingly, our results indicate that teachers' diagnostic competence, per se, was not related to learning progress. This result is in contrast to a finding of Fisher, Berliner, Filby, Marliave, Cahen, and Dishaw (1978), whereby teachers' accuracy in diagnosing student skill levels was related to student achievement. Our results, however, do not necessarily mean that teacher diagnostic competence is irrelevant for achievement. Diagnostic competence becomes relevant for achievement only in interplay with specific didactic teaching behaviors (Helmke & Schrader, 1987). Supporting individual students during seatwork is one such teacher behavior. That is, optimally supporting students during seatwork requires accurate judgment of students' actual need for support. In addition to solving the problem of *who* needs help, the teacher must determine the appropriate *dosage* and *timing* of support. High diagnostic competence, therefore, might facilitate the fine tuning of the teacher's support given to individual students.

Conclusion

In summary, the results of our study indicate that increasing or decreasing independent student practice in order to heighten academic success is not justifiable. According to our results, qualitative, not quantitative, factors are crucial for the effectiveness of practice. Three conditions are considered especially important in designing effective seatwork activities. First, adequate external conditions must be provided for independent practice; for example, nonacademic activities, procedures, and disruptions should be held to a minimum. Second, the continuity of seatwork seems to be of special significance. In order to ensure continuity, independent practice must have been adequately prepared. In other words, independent practice is of benefit only if students have already attained a minimum level of competency. Explanations and lectures represent unfavorable interruptions, indicating less than optimal preparation of independent practice. Third, practice is more successful when the teacher actively circulates around the classroom, not only monitoring but also supervising students' work and giving support to single students discreetly, without distracting other students.

Recommendations for effective teaching behavior based on these points are obvious. However, the difficulty teachers face in changing well-established behavior patterns—even though they may have recognized their lack of efficiency or the detrimental effect of their behavior—should not be underestimated. In the case of diagnostic competence, recommendations are less obvious. How can teachers learn something about their diagnostic competence, and how can they improve it if necessary? As long as a more complete understanding of the knowledge base underlying diagnostic competence is lacking (see Leinhardt, 1983, for a promising line of research), a seemingly obvious and practical way of improving diagnostic competence (Wahl, Weinert, & Huber, 1984) might be as follows: (a) assign problems that students must work on independently; (b) predict the likely outcome of each student's work, and (c) compare the predictions with students' actual results. Such comparisons would yield direct information about the accuracy of one's predictions and could lead to higher sensitivity in the long run.

A more systematic way of improving one's accuracy would be to reflect on possible reasons for discrepancies between expected and actual achievement. Hypotheses could be tested during instruction by varying methods of instruction and the difficulty and type of assigned problems. With such a procedure, much could be learned about students' learning problems, their relation to instruction, and possible means of remediation. Furthermore, this procedure coincides with the conceptualization of teaching as clinical information processing (Shulman & Elstein, 1975), an approach by which teachers may enhance their knowledge about personal judgment biases as well as their understanding of students.

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Article: Estimating the Cost of Seatwork. Jachym, Allington and Broukou, 1989

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Estimating the cost of seatwork

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While working on a research project investigating elementary children's whole-day school experiences, we observed pupils participating in regular classroom reading and language arts instruction, remedial reading instruction, and special education classes (Allington & McGill-Franzen, 1989). We found that in all types of reading/language arts classes, children spent a great deal of their time working on an enormous amount of seatwork tasks. In fact, during one classroom reading period, one second-grade student spent approximately 2½ hours working on more than 20 skill sheets.

Because we observed that a large number and variety of seatwork activities were readily available within all the schools we visited, we inquired about the cost of producing and purchasing these materials for each school. What we quickly discovered was that school administrators were as uncertain as we were about the total expenses incurred by the school for providing seatwork materials.

One of the reasons why it is difficult to assess the expense of seatwork tasks is because it entails more than the overt cost of purchasing commercially prepared materials. In other words, the costs of producing and reproducing various practice materials are subsumed within a variety of school-expenditure categories. For instance, the cost of reproducing materials includes the cost of the commercially published package of skill sheets, the cost of paper and ink, the salaries of the school personnel who duplicate seatwork materials, and the equipment costs such as leasing and maintenance. When questioning school administrators about the cost of seatwork, we found that estimated amounts allocated in each category for producing and reproducing these tasks were never aggregated. Therefore, because an estimated total cost of seatwork materials had not been determined, most school administrators unknowingly had underestimated the costs associated with seatwork activities.

Examining the cost of seatwork

To analyze the cost of reading and language arts seatwork materials, we elicited cooperation from school principals. We asked principals to complete a written questionnaire concerning school demographics and the costs of seatwork materials used at the second-grade level. We asked only for second-grade materials to simplify the data collection process for each participating principal. These schools were located in five different districts in two states. The schools were in rural, suburban,

Table 1
Calculations for determining the estimated cost of seatwork per second-grade student

1. Commercially published workbooks:
   a. Sum of the average cost of each type of skillbook ($\bar{X}$) per second-grade student (e.g., $a = \bar{X} + \bar{X} + \bar{X}$) a = ______
2. Equipment costs:
   b. Cost of machines leased (or purchasing cost ÷ 7) + the cost of maintenance b = ______
   c. Estimated cost of supplies (fluids and/or cartridges) c = ______
   d. Number of reams of paper × cost per ream d = ______
   e. Estimated % of copying for reading/language arts e = ______
   f. Number of students in second grade f = ______
   g. Average cost per student $\frac{(b+c+d) \times e}{f}$ g = ______
3. Personnel costs:
   h. Annual salary of "other" personnel h = ______
   i. Estimated % of "others" time devoted to copying for reading/language arts i = ______
   j. Estimated salary paid for copying ($j = h \times i$) j = ______
   k. Average cost per student ($k = \frac{j}{f}$) k = ______
4. Total average cost of reading/language arts seatwork per second-grade pupil ($a + g + k$) ______

and urban sites and ranged in enrollment from about 250 to over 800 students.

To determine the estimated cost of producing/reproducing and purchasing seatwork activities, we divided expenditures into three categories: cost for commercially published workbooks, equipment, and personnel. Then we calculated an average cost per student within each category for each individual school, determined a total average cost per student within the school, and finally estimated an average cost of seatwork for second-grade students across all five schools. Table 1 delineates the cost estimation procedures.

What seatwork costs

As shown in Table 2, the average expenditure for seatwork materials per second-grade student across all schools was US$59.98. However, it can be seen that the total cost of seatwork tasks per child among the schools varied considerably. Specifically, the largest difference in costs occurred between School 1 and School 2. School 1, which allocated the greatest amount of funds for purchasing and reproducing seatwork tasks, spent approximately $100 per pupil. In comparison, this amount is 3 times more than that spent at School 2, the school which allocated the smallest amount of funds.

Table 2 also illustrates how the schools differed in the way their funds were allocated. For example, School 1 purchased four types of workbooks for each student, had more photocopying machines available within the school, used the largest amount of paper, and had the highest estimated percentage of funds allocated for reproducing reading and language arts materials (87%).

In addition, School 1 and School 3 (whose estimated expenditures for second-grade workbooks were the same) spent nearly twice as much on purchasing commercially published workbooks than School 4 and School 5 (two schools that also had identical estimated expenses). Furthermore, School 1 spent more than 10 times the amount of funds on reproducing materials (i.e., the average cost per pupil of "Estimated Equipment Cost" plus "Estimated Personnel Costs") than School 2. In essence, the amount of funds allocated for seatwork materials and the way the funds were allocated within each school differed by degrees.

Discussion

We found wide variability in the cost associated with seatwork activities in the second-grade classrooms in the schools from which we collected data. Our small sample

Table 2
The estimated cost of seatwork per second-grade student within and among five schools

Categories	School 1	School 2	School 3	School 4	School 5
School data					
Total number of students	308	460	900	260	812
Community types	urban	suburban	suburban	suburban	rural
Commercially published workbooks (2nd grade)					
Average cost of basal reader workbook	US$10.95	US$10.95	US$10.95	US$10.95	US$10.95
Average cost of spelling workbook	5.70	5.70	5.70	0.00	0.00
Average cost of language arts workbook	7.45	0.00	7.45	0.00	0.00
Average cost of phonics workbook	4.07	4.07	4.07	4.07	4.05
Total cost per second-grade student:	$28.17	$20.72	$28.17	$15.02	$15.02
Average cost per second-grade student across five schools: US$21.42					
Estimated equipment costs					
Cost of machines	$1,428	$3,500	$5,000	$4,500	$9,766
Cost of supplies	3,000	500	2,500	125	2,000
Cost of paper (at US$2.50 per ream)	18,000	3,750	7,500	750	5,625
% copying for reading/language arts	87%	40%	50%	59%	60%
Average cost per second-grade student across five schools: US$20.69	$63.35	$ 6.74	$ 8.33	$12.20	$12.85
Estimated personnel costs					
Annual salary of "other" personnel	$6,000	$15,000	$27,000	$18,000	$8,090
% of time copying instructional materials	53%	5%	88%	60%	95%
Salary earned by copying instructional materials	3,180	750	23,760	10,800	7,685
Average cost per second-grade student:	$10.32	$ 1.63	$ 26.40	$ 41.54	$ 9.46
Average cost per second-grade student across five schools: $17.87					
Total costs per student:	US$101.84	US$29.09	US$62.90	US$68.76	US$37.33

Total average cost per second-grade student across five schools: US$59.98 undoubtedly contributes to the variation, and we are willing to admit that our average estimated cost is unlikely to be reliable. Nonetheless, we expect that the variation we found is not uncommon, if only because variation in different aspects of instruction has been widely reported in classroom based research (Allington & McGill-Franzen, 1989; Fisher, et al., 1978). Further, our data are only for grade two, so it would be unwise to extrapolate our findings to other grade levels; additional research is required to evaluate the generalizability of our findings.

In addition, our estimates are likely to be low, even though the sums we report seem considerable to us. Because it was impossible to calculate reliable estimates of teacher time spent duplicating materials, for instance, we did not include such costs. Similarly, we found no straightforward method for estimating costs for electricity to run equipment, to light the rooms where equipment was used, or for the heating costs. In short, the study and the procedure suggested have obvious limitations.

These limitations notwithstanding, the available classroom research indicates that students are confronted with basal materials an estimated 70% to 90% of the time during reading instruction (Fisher et al., 1978; Mason & Osborn, 1982) and that as much as two thirds of this time is allocated to seatwork assignments (Allington & McGill-Franzen, 1989; Rosenshine, 1979). The majority of these assignments come from commercially published workbooks, skillbook series, or skill sheet packages (Anderson, 1984; Anderson, Brubaker, Alleman-Brooks, & Duffy, 1985; Durkin, 1978-79).

Theoretically, seatwork tasks such as workbooks and skill sheets serve two functions in the classroom: instructional and managerial. As instructional activities, Osborn (1984) suggests they may be used to provide children with opportunities to practice difficult and confusing parts of a reading lesson, to review what has previously been taught, to integrate previously learned skills into new concepts, to develop good independent work habits, or to provide instructors with feedback relevant to each student's reading ability.

In the managerial function, seatwork activities keep students engaged while freeing the teacher to pursue other endeavors. That is, typically, seatwork tasks are assigned to children who are not actively involved in teacher-directed small group reading instruction.

Seatwork is a pervasive activity in elementary classrooms.

Photo by Mary Loewenstein-Anderson

Although a lot of time is spent on workbook and skill sheet tasks, they do not seem to be particularly effective activities for developing reading abilities in children. In fact, Leinhardt, Zigmond, and Cooley (1981) reported that the most powerful variable influencing reading achievement is the amount of teacher-directed reading of text. Seatwork activity, on the other hand, was not strongly correlated with increased achievement. Further, Taylor and her colleagues (1985) reported that children's ability to complete multiple-choice main idea tasks did not reliably predict whether they could summarize material from their social studies books. Thus, to serve any useful role in facilitating learning, seatwork must provide activities that can and will be useful beyond the completion of the skillsheet.

Given that so much time is allocated to seatwork, teachers must have an enormous supply of materials readily available. Obviously then, these materials must be purchased or reproduced by educational agencies. For example, schools purchase a variety of workbooks (e.g., basal workbooks, vocabulary workbooks, phonics workbooks, spelling workbooks), commercially published duplicating masters, and blank Dittos for teacher-made tasks. In fact, Anderson, Hiebert, Scott and Wilkinson (1985) estimated that it is not inconceivable for an elementary school student to complete 1,000 workbook pages and skill sheets in the course of an academic year. This represents an enormous investment of instructional time and educational monies – an investment that begs for closer scrutiny.

Conclusion

Since traditional seatwork seems to be an instructional activity which does not reliably enhance reading acquisition, we suggest that educators consider the costs of providing seatwork materials within their schools. We are not suggesting that there is no place in the classroom for seatwork activities which focus on individual practice of reading skills and strategies; nevertheless, we do believe that the average cost of seatwork per second-grade student across these schools was a high price to pay for seatwork activities that typically are not effective in fostering the acquisition of reading.

In our view, current reading instruction too often exhibits an enormous imbalance in the array of literacy tasks presented. Too much time is allocated to seatwork and too little to the actual reading of stories, magazines, and books. There are a variety of hypotheses about why this occurs (Anderson, 1984; Shannon, 1989). We would ask, what is more accessible in most schools – an array of children's books or an array of seatwork skills materials? Is it easier to get 25 copies of a classic children's book or 25 copies of a skill sheet? Until children's books are truly accessible as instructional materials, we should not be surprised to find they are infrequently part of the instructional day (Fielding, Wilson, & Anderson, 1985).

To enhance the accessibility of children's books and to address the current imbalance in literacy instructional activities, we suggest that the economic costs of current activities be considered. We recommend that educators follow (or adapt) the mathematical calculations outlined in Table 1 to determine a total estimated cost of providing seatwork materials in their schools. Then, we suggest that the funds allocated for seatwork be reduced by half, thereby providing additional funds for purchasing materials which have been shown to be effective in fostering reading achievement. For instance, if the total seatwork costs across these five schools were cut in half and the residual money spent on tradebooks, these schools would be able to purchase between 8 and 30 paperbacks per child. By doing so, each school would be providing valuable materials to be used as independent or teacher-directed activities for developing reading abilities in children.

Furthermore, not only will funds become available to support more authentic reading activities, time will also become accessible. That is, by reducing by half the number of traditional paper-and-pencil activities assigned for seatwork, the amount of time allocated for such activities could be freed for engaging students in real reading – an activity too frequently omitted fom current reading instructional programs (Allington, 1977; Gambrell, 1984; Walmsley, 1988). Fielding, Wilson, and Anderson (1985) suggest that while access to children's books is a necessary beginning, access alone is not enough. What is needed is the integration of book reading into the instructional activities of the school day. Reallocation of substantial portions of instructional time from seatwork skill activities to tradebook reading activities is one way to put reading back in the reading instructional day.

If we value the reading of books, we will incorporate books into our reading program. We have been told too often it is an issue of inadequate funds and inadequate time for books. It is neither. Rather, it is an issue of what we value. If we have no funds, nor time for books in school, why should we expect children to value reading or books, in school or out?

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How can a teacher move beyond worksheets?

STUDENTS WORKING TOGETHER

- **Cooperative Learning**
- **Reciprocal Teaching**
- **Peer Tutoring**

PROJECTS THAT LAST MORE THAN ONE PERIOD

- **Week-long units**
- **Theme-based instruction**

ADVANTAGES OF COOPERATIVE GROUPWORK

Cooperative learning is an instructional approach that uses teams of students of varying achievement levels. Teams are rewarded on the basis of the improvement of individual members. Used as part of an in-class Chapter 1 program, or in a pullout setting, cooperative learning offers an effective alternative to seatwork.

Achievement:

Most studies comparing cooperative learning with traditional classroom techniques show significantly greater achievement levels for students in the cooperative learning groups. (NOTE: Methods lacking the individual accountability feature, like Jigsaw and Learning Together, are less effective: higher achieving students are not motivated to help their peers learn, they can just do the work themselves.)

Students who take on the role of "explainers" benefit as well as the students they help.

Working in groups with low-achieving students has no negative impact on the performance of high-achieving students.

There is some evidence of higher effect of cooperative learning on the achievement levels of Black and Hispanic students.

Affective benefits

Compensatory education programs often isolate disadvantaged learners from their peers, creating a cycle of stigma and low self esteem. Ability grouping can lead to racial and social segregation.

The cooperative learning model offers a context for students to interact as equals across racial, social, class and gender lines. It has been demonstrated that the interracial friendships promoted by cooperative learning extends beyond the classroom, into cafeteria seating patterns and playground patterns. Students involved in cooperative learning are more likely to have fiendships outside their ethnic group.

Cooperative learning can lead to an atmosphere in which students support each other to do well in school. Students have an interest in encouraging each other to do homework, to come to class every day.

Other affective outcomes of cooperative learning: (Slavin 1984)

- More acceptance of academically handicapped students
- Students feel more liked by others, more successful
- Better class climate
- Decrease in prejudice
- Fewer contacts with police
- Higher behavioral ratings
- Students like school more
- Students have more sense of control over their own fate

Studies report higher levels of:

- altruism
- time on task
- self-esteem
- self-acceptance
- cooperation
- independence
- self-direction
- confidence
- content retention
- problem-solving behavior
- feel more successful
- better attendance

Group Activity 1

Participants will work in groups of three. Within the groups, participants will take on the roles of reporter, time-keeper and recorder.
Each participant will give examples of a cooperative groupwork technique with which they have had some experience. The recorder will keep notes on the examples offered. The time-keeper will keep track of the time allotted to make sure that each participant will have the same amount of time to talk. The reporter will be responsible for communicating the group's examples to the workshop.

Name of cooperative groupwork method:

____

How did it work?

____

____

____

How were the groups formed?

____

____

How were the groups rewarded?

____

____

How was individual responsibility built in to this method?

____

____

What problems came up using this method?

____

____

EXAMPLE 1: Student Team Learning

Students are divided into groups of five, each group having students of high, moderate and low achievement.

After a teacher-directed lesson, students complete the worksheets as a group. They use whatever means they can agree upon to master the material-discussing it in a group, quizzing each other in pairs.

At the end of the unit, each student is tested individually on the material. Each student's contribution to the team score is are based on how much they exceeded their past quiz average.

EXAMPLE 2: Jigsaw

Teams of three to five students are formed, each team including students of varying ability. The teacher presents a lesson, following which all students are given a chapter or a unit to read.

Each student is designated as an "expert" on one aspect of the lesson. Experts in each area from all teams meet for about thirty minutes in "expert groups" to discuss their part of the topic in depth using worksheets that relate to that aspect of the reading. Students return to their teams, taking turns explaining their area of expertise to their team members.

Individual scores are based on a quiz on all aspects of the lesson; team scores are based on individual improvement over their past average.

EXAMPLE 3: Pairing

Students are put into pairs. Students in each pair take turns reading to each other, predicting story endings, summarizing stories, responding to questions made up by their partners, practicing spelling, decoding, and vocabulary.

Students can work in pairs for writing assignments, writing drafts, revising and editing each other's work and publishing team books.

EXAMPLE 4: Team Assisted Individualization

Using the Team Accelerated Instruction approach, students take a placement test that determines their level.

Worksheets are provided for every level and students work at their own pace. Teammates check each other's work using answer sheets. The final test for each unit is scored by a student monitor. Each student contributes to the team score by the number of units mastered each week.

This method is suited to mathematics, since many concepts depend on an understanding of earlier ones. It allows students to proceed at their own pace, avoiding boredom. With students performing the functions of managing materials and checking work, the teacher is free to work with individual students or small groups.

EXAMPLE 5: Teams-Games Tournaments

The teacher delivers instruction to the class as usual.

Students are divided into heterogenous teams.

Students with similar levels of past performance represent their teams in a weekly tournament.

Tournament is composed of a series of games. At each game, three students with similar levels of past performance, each from different teams, compete, using a list of questions based on the academic material they have studied.

Social skills required for cooperative groupwork

TASK SKILLS

1. Agenda management
    - Setting an agenda
    - Sticking to an agenda
    - Managing time
    - Revising an agenda
    - Summarizing progress

2. Giving and receiving ideas
   Setting an open atmosphere
    - Brainstorming
        - Forming a wish list
        - Communications skills
    - Active listening/ Paraphrasing
        - Relating tog to ideas, reactions of others
        - Asking for clarification
        - Maintaining eye contact
    - Conflict resolution
    - Checking for consensus
        - Seeking basics for lack of consensus
        - Expressing disagreement constructively
        - Polite, proactive disagreement
        - Seeking the higher level synthesis
    - Building on the best ideas
        - Evaluation of ideas
        - Analysis and synthesis

MAINTENANCE SKILLS

3. Encouraging and appreciating
    - Seeking participation by all
    - Processing feelings and attitudes
    - Appreciating individual differences

4. Guiding group process
    - Checking (forfor understanding, agreement, disagreement, participation)
    - Creating and assigning group roles and responsibilities (agenda keeper, secretary, appreciator, checkor)

(Kagan, 1989)

Sample Reciprocal Reaching Dialog

Handout 16: Sample Reciprocal Teaching Dialog

Palinscar, Annemarie Sullivan. (1984.) Reciprocal Teaching: Working Within the Zone of Proximal Development. Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984),

Table 1

Sample Reciprocal Teaching Dialogue

Teacher: The title of this story is Genius with Feathers. Let's have some predictions. I will begin by guessing that this story will be about birds that are very smart. Why do I say that?

S1: Because a genius is someone really smart.

Teacher: But why would I say "birds that are very smart?"

S2: Because they have feathers.

Teacher: That's right. Birds are the only animals that have feathers. Let's predict now the kind of information you might read about very smart birds.

S3: What kinds of birds?

Teacher: Good one. What kinds would you guess are very smart?

S3: Parrots of blue jays.

S1: A cockatoo like on Baretta.

Teacher: What other information would you want to know?

S: No response.

Teacher: I would like to know what these birds do that is so smart. Any ideas?

S2: Some birds talk.

S4: They can fly.

Teacher: That's an interesting one. As smart as people are, they can't fly. Well, let's read this first section now and see how many of our predictions were right on. I will be the teacher for this one.

S2: That's a good part of it. The answer I wanted was how they relay the message from one crow to the other crow.

Teacher: Summarize now.

S1: This is about how crows have developed a system.

Teacher: Of what? You must include the whole main idea.

S1: Of communication.

Teacher: That's right. The paragraph goes on to give examples of how they use pitch and changes in interval but these are supporting details. The main idea is that crows communicate through a relay system. Jim?

S1: Any clarifications?

S2: Does relay mean to transpose?

S1: (Looks to teacher.)

Teacher: Well, to transpose means to change--like in music--I would transpose a song by playing it higher or lower. To relay just means to pass on. Like in a relay race the runners pass on a baton from one person to another until the race is over. OK? Any more clarifications?

S1: I'm a little unclear about something in this paragraph.

Teacher: OK. What would that be?

S1: I just want to make sure about being great mimics. Does that mean that they're smart and they pick up things very quickly?

Teacher: That's part of it. Dave, what do you think a mimic is?

S2: Like imitate somebody else's voice, can imitate something.

S3: Like that one guy, what's him name on HBO, Rich Little.

Teacher: Rich Little does impersonations. He mimics or imitates not just the person's voice but also the way they walk and what they say. To mimic is to imitate or copy. That was a good point to clarify. Jim?

S1: My prediction is--

It says here that the crows can use their communication system to play tricks, so maybe something about the tricks they play? I

(All read silently)

Teacher: My question is, "Who is the genius with feathers?"

S1: Crows.

Teacher: That's right. So we were correct in our prediction that this would be about birds but we didn't correctly guess which bird, did we?

My summary would be that these paragraphy describe the clever things that crows do which make them seem quite intelligent. Is there anything else I should add to my summary?

S1: How they steal corn?

Teacher: Well now, that's a detail which described one of the ways in which they are clever. For our summary we will not include these details.

I believe I found a word that needs clarification. What does "resourceful" mean?

S: No response.

Teacher: If I say that you are a resourceful person, I mean that you are able to deal with problems and difficulties easily. Being resourceful is another way in which crows are intelligent. I would like to make a prediction now. That last sentence says, "One major reason they have mastered survival against heavy odds is their amazing communication system." My prediction is that they will now describe this communication system. How do you think crows communicate with one another?

S: Caw-caw.

S: With a special song.

Teacher: Alright. Let's read on. Who will be the teacher for this section?

(Dialogue which illustrates the student, Jim, leading the discussion and the teacher providing corrective feedback.)

S1: Who do crows communicate with one another?

Teacher: Good question! You picked right up on our prediction that this is about the way crows communicate. Whom do you choose to answer your question?

S1: Barb.

S2: Crows that built-in radar and a relay system.

would like Sue to be the next teacher.

Teacher: Excellent prediction. The last sentence of a paragraph often can suggest what the next paragraph will be about. Good for you.

Day 4:
TEXT:
Spinner's mate is much smaller than she, and his body is dull brown. He spends most of his time setting at one side of her web.

13. S: (No question.)

14. T: What's this paragraph about?

15. S: Spinner's mate. How do spinner's mate?

16. T: That's good. Keep going.

17. S: How do spinner's mate is smaller than...How am I going to say that?

18. T: Take your time with it. You want to ask a question about spinner's mate and what he does, beginning with the work "how."

19. S: How do they spend most of his time sitting?

20. T: You're very close. The question would be, "How does spinner's mate spend most of his time?" Now, ask it.

21. S: How does spinner's mate spend most of his time?

Day 7:
TEXT:
Perhaps you are wondering where the lava and other volcanic products come from. Deep within our earch there are pockets of molten rock called magma. Forced upward in part by gas pressure, this molten rock continually tries to reach the surface. Eventually--by means of cracks in the crustal rocks or some similar zone of weakness--the magma may break out of the ground. It then flows from the vent as lava, or spews skyward as dense clouds of lava particles.

22. S: How does the pressure from below push the mass of hot rock against the openings? Is that it?

23. T: Not quite. Start your question with, "What happens when?"

24. S: What happens when the pressure from below pushes the mass of hot rock against the opening?

25. T: Good for you! Good job.

Day 11:
TEST:
Scientists also come to the South Pole to study the strange lights that glow overhead during the Antarctic night. (It's a cold and lonely world for the few hardy people who "winter over" the polar night.) These "southern lights" are caused by the Earth acting like a magnet on electrical particles in the air. They are clues that may help us understand the Earth's core and the upper edges of its blanket of air.

28. S: Why do scientists come to the south pole to study?

29. T: Excellent question! That is what this paragraph is all about.

Improvement of Question-Asking by a More Competent Seventh Grade Student (Sara)
Day 2:
TEXT:
HOW CAN SNAKES BE SO FLEXIBLE?

The snake's skeleton and parts of its body are very flexible--something like a rubber hose with bones. A snake's backbone can have an many as 300 vertebrae, almost ten times as many as a human's. These vertebrae are connected by looses and rubbery tissues that allow easy movement. Because of his bendable, twistable spinal construction, a snake can turn its body in almost any direction at almost any point.

1. S: Snake's backbones can have as many as 300 vertebrae--almost _ _ _ times as many as humans.

2. T: Not a bad beginning, but I would consider that a question about a detail. Try to avoid "fill in the blank" questions. See if next time you can fine a main idea question and begin your question with a question word--how, why, when....

Day 3:

TEXT:
There are snakes in nearly all parts of the world. Some snakes prefer warm, arid desert areas. Others prefer leafy forests, fields, and woodlands. Some stay in areas near water and are fine swimmers. Then there are several varieties that live all their lives in the sea.

3. S: Can snakes live their whole lives in seas? (Note: lifted directly from the text segment, "some snakes live their whole lives under the sea.")

4. T: See if you can ask a question using your own words.

Day 4:

TEXT:
The other kind of camel--the one with two humps--is the Bactrian. Its home country is the Gobe Desert of northeastern Asia. The Bactrial has shorter legs and longer wool than the one-humped camel. It also has stronger, more rugged feet. This is important because instead of having sand to walk on, the Bactrian camels live in rough and rocky parts of the world.

5. S: Where is the Bactrian found?

6. T: Good for you.

Day 6:
TEXT:
When most full-grown spiders want to travel, they have to walk on their eight legs. But some small kinds of spiders, and many young ones, use an easier way. They climb up on bushes, fence posts, or weed stems and spin streamers of silk. When the wind catches the silk and blows it away, each spider tightly holds onto his own streamer. The silk streamer carries him through the air if it were a parachute or a balloon.

7. S: I think I have another. When it's traveling, what do they compare the spider to?

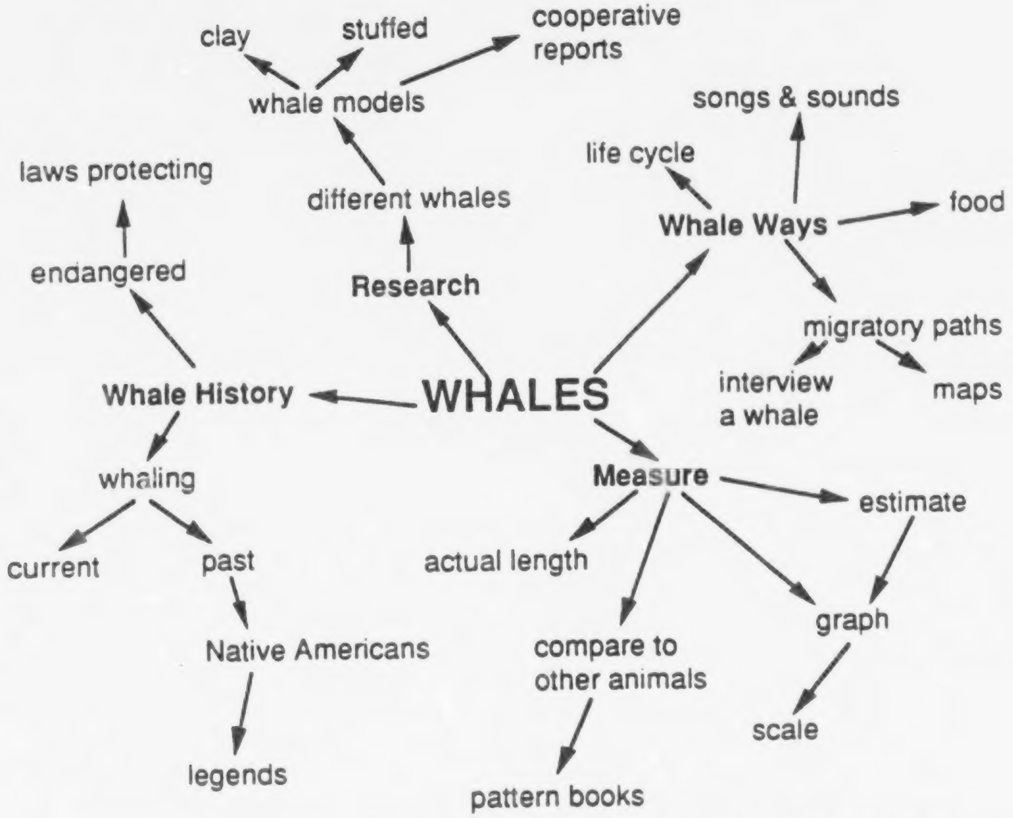
8. T: An interesting question.

Day 11:
The young caterpillar's first meal is its own eggshell. Then it eats a leaf and each day eats more and more food. After a few days, the caterpillar becomes too large for its skin. A new skin forms beneath the first one, the old skin somes open and, like a snake, the caterpillar wriggles its way out of the split skin. Then the caterpillar goes on eating leaves or other kinds of food. When the new skin becomes too tight for the growing body, it again splits and comes off. By then the caterpillar is covered by another skin. This eating and shedding goes on for several weeks. The old skin may be replaced by a new one four or five times. Each time the skin is shed, the size and color of the caterpillar change.

9. S: Why does the caterpillar's skin split?

10. T: Excellent question. That was the point of the entire paragraph.

Webbing Example


clay
stuffed
cooperative reports
whale models
songs & sounds
life cycle
laws protecting
different whales
Whale Ways
food
endangered
Research
migratory paths
interview a whale
maps
Whale History
WHALES
Measure
whaling
estimate
current
past
actual length
graph
Native Americans
compare to other animals
scale
legends
pattern books

(adapted from Griswold, 1987, Whale Lesson)

Boynton Stream Project

BOYNTON STREAM

PSEN SUMMER SCHOOL
1990

THE BOOK OF BOYNTON STREAM--INTRODUCTION

We explored and studied the Boynton Stream during summer school in July. We measured a part of the stream using several measuring tools.

We found many types of plants and some animals. Some of us drew pictures of the plants or animals. We brought a lot of plants inside and looked them up in the Field Guide Books to find out information about them.

We used a plant press to preserve the plants and we used sun paper to photograph the plants.

During the three weeks of the Ecology Project, we learned alot about the subject. We read the newspaper and found articles about ecology, especially disasters like oil spills or forest fires. Then we marked on the world map where these disasters were.

We read about various endangered species and made graphs of their populations. We played games about the environment. We did a guided imagery exercise about animals during a storm. We wrote a lot in our journals about different ecology topics.

JULY 18,1990

CHAPTER 1/PEEN SUMMER SCHOOL JULY 1990

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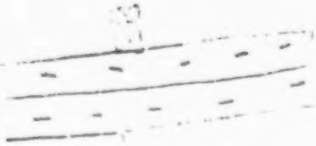
Dang Tran
Champhonsak Vongphachanh
Leina Ye

THIS BOOK IS PRINTED ON RECYCLED PAPER

PLANTS WE FOUND NEAR THE BOYNTON STREAM

* COMMON NAME *	* SCIENTIFIC NAME *
ARROWHEAD	SAGITTARIA
BEDSTRAW	GALUM TRIFOLIUM
BLACK MEDICK	MEDICAGO LUPILINA
BLUE VERVAIN	VERBENA
BULLHEAD LIL	NUPHOR VARIEGATUM
BURDOCK	ARCTIUM MINUS
CATTAIL	TYPHA ANGUSTIFOLIA
CHICORY	CIRCHORIUM INTYBRUS
COMMON SOW-THISTLE	SONCHUS ASPER
CURLY DOCK	RUMEX CRISPUS
DAY LILY	HEREPOCALLIS FULVA
DUCKWEED	AZOLLA CAROLINIANA
EVENING PRIMROSE	OENOTHERA BIENNIS
GOLDEN ALEXANDER	ZIZIA AUREA
HONEY SUCKLE	RHODEDENDRON ROSEUM
MILKWEED	ASCLEPIAS SYRIACAL
MOTH MULLEIN	VERBAEUM BLATTARIA
MULLEIN	VERBASOUM
OX-EYE DAISY	CHRYSAMTHEMUM LEUCANTHEMUM
PURPLE LOOSESTRIFE	LYTHRUM
SPEARMENT	MENTHA SPICATA
SPOTTED KNAPWEED	CENTAUREA MACULOSA
TEASEL	DIPSACUS LACINIATUS
THISTLE	CIRSIUM ARVENSE
TRUE FORGET-ME-NOT	MYOSOTIS SCORPIROIDES
WILD GRAPE	VITIS SP.
WILD STRAWBERRY	FRAGARIA

What we found in the water
arrow heads
forget me nots
two baby ducks
and fish jump
lots of mosquitoes
lily pads


Route 3

stin Johnson

Drawing of Burdock

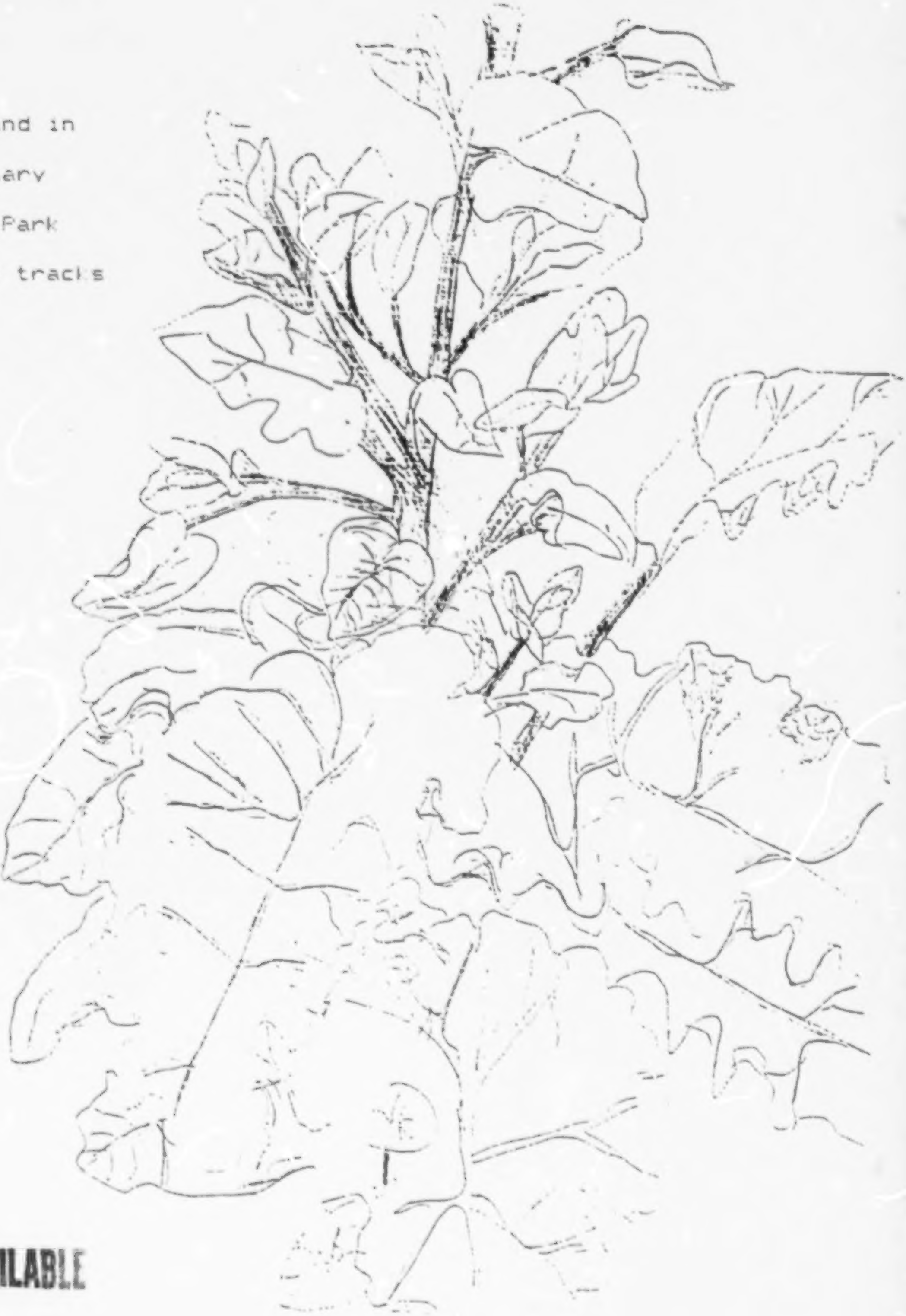
by Anton Callisto

Burdock found in

Bird Sanctuary

in Stewart Park

on Railroad tracks



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THE STREAM

BY KATHY FARRA AND CHIE TANOUE

We saw butterflies
We saw bees
We saw all different kind of flowers
We saw green leaves
We saw people walking
We saw the trees next to the stream

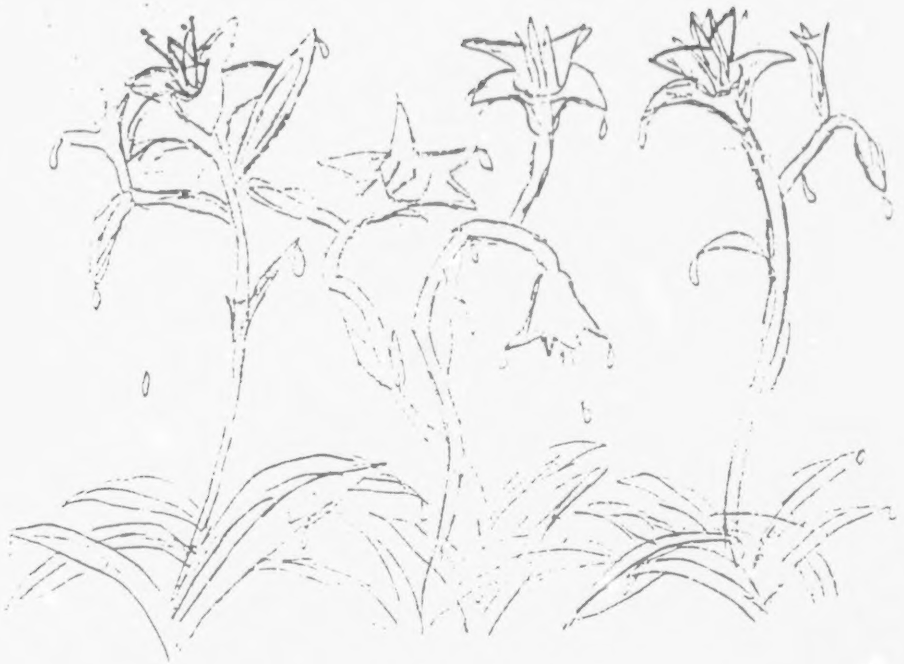
We heard cars coming by
We heard people cutting the grass
We heard a frog croak
We heard people talking
We heard birds chirping

We smelled different flowers
We smelled new cut grass
We smelled the swamp
We smelled fish in the stream
We smelled the new tar on the road

We cut flowers to bring back to class
We caught a grasshopper
We found a dead turtle
We brought back leaves
We got a little wet

Angel M.

Day Lily



I drew this day lily
near the railroad tracks
across from Boynton School.
The day was hot and wet.

The day was hot and wet.
I like to draw anything
that I see.
I like these Day Lily.

Shawanya Allen Jul. 11.19[illegible]

It was a Friday morning when we went
out to the Boynton stream.
and found lots of interesting things.

Snapping turtles
beautiful flowers and plants
dandelions, moth mullein
and lots of other colorful
flowers and plants.

We came in and had an experiment
with the flowers
and plants we had picked
We pressed the plants
flat
We left them there overnight

The next day they were
flat as a pancake

I learned
there are lots of interesting things
in the stream

My favorite part
was picking the flowers
I like the honeysuckle
the best

Amy Lee

07/11/90

I was a little bird living in the woods. It was such a nice day. The sun was shining and the sky was blue.

"Good morning, sweethart. I am going to find something to eat for you," said mother.

"Can I go with you, mother?"

"No, sweethart. You are too small."

"When can I go with you, mother? I want to look down at the whole wood from the blue sky and lay on the big beautiful flowers."

"When you are bigger and know how to fly, sweethart. Wait for me. I'll come back soon and tell you what I see outside. Bye."

"Bye, mother"

Mother waved to me and flew away. I was so interested in the outside world. The squirrels were running up and down the trees and throwing nuts to each other. It was so much fun. I wanted to play with them but I needed to stay home waiting for mother to come back.

All of a sudden, the dark heavy clouds covered the whole sky. It started to rain immediately. The squirrels were scared but their mother was coming to bring them home.

"Where are you, darling?" the squirrels' mother asked.

"We are here, mother."

"Let's go home. The summer storm is coming," said the mother.

It was quiet, everybody was home with their mother. But where was my mother?

"Where are you, mother?" I shouted

Suddenly, the black dot came close from the sky. It was mother.

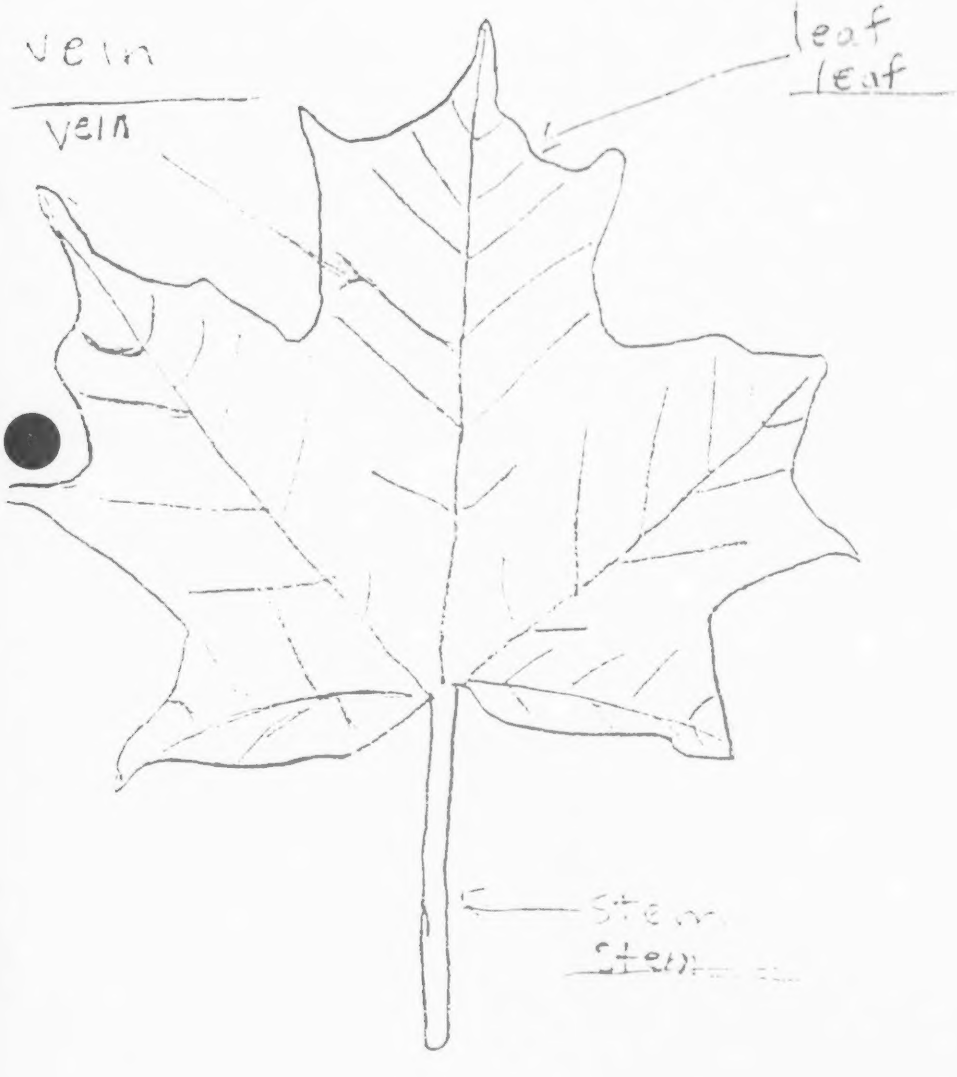
"Mother, mother, mother." I shouted.

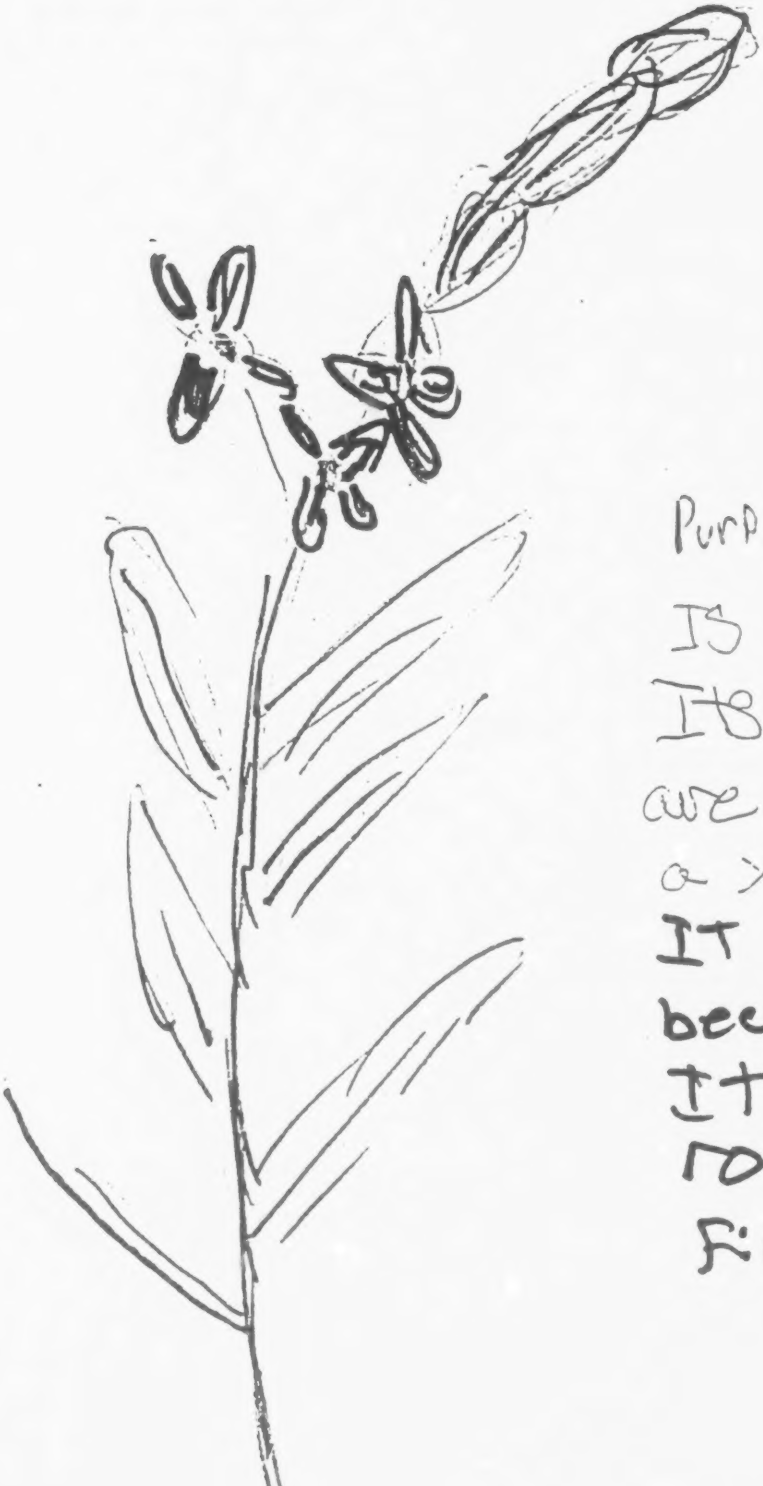
Mother was home. I felt warm with mother. The storm won't hurt me. I was not scared anymore.

The storm was gone. The sun shone again. I was so happy because mom told me I can learn to fly.

guided imagery

NORWAY MAPLE


vein
vein
leaf
leaf
stem
stem



Purple Loosestrife
IS a weed.
ItS Flowers
are Purpe with
a yellow middle.
It is very
beatiful weed.
It Lives by
roadsides, and
Fiellds

Dan Coppielo

A CUTE LITTLE SCRUB JAY

A little baby bird was abandoned by its mother and she was all alone and scared. The baby bird was in a dangerous place because people are cutting down trees to build houses.

They cut down the bird's tree and the baby bird fell on the ground. A guy came by and picked up the bird and kept her as a pet.

When the bird grew up the guy noticed that the bird was a female Scrub Jay. (Some people call these birds a Scruff Jay.) The owner went to the pet store and got a male Scrub Jay.

He left the two birds alone. When he came back he saw a nest inside the bird cage which meant the birds were going to have babies. After about three weeks the babies hatched.

He got some worms from outside for the mother bird to give to the babies. After awhile, when the babies were older, the man trained them to be in bird shows.

WOhen it was their chance to do the bird show, they performed their tricks. People didn't think that birds could pedal bikes but these birds could. Everybody was so amazed.

When the act was done the judges announced their score and every judge except one gave them a 10. The other judge gave them 9.5.

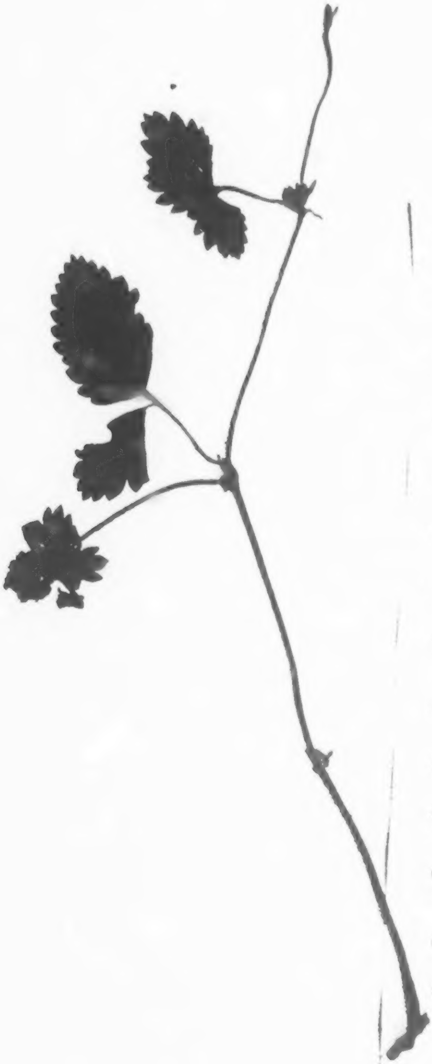
The owner was so happy that he used the prize money to buy toys for the birds and a lot of food whenever they wanted.

They lived happily ever after.

Bobbie Jo Mettler

July 16,1990

WILD STRAWBERRIES OF THE BOYNTON STREAM



Wild Strawberries are found
in fields and near water.
They grow in mid-summer
and they are smaller
than their leaves
when they are full grown.
They are not poisonous.
You can eat them raw
or use them to make jam
or tea.
They have leaves that are toothed.
The flowers are round petaled
and on a separate branch
than the leaves.

from A Field Guide to Edible Plants
by Lee Allen Peterson

Binaya Oja

Gugu Ntombela

WWHEN WE WENT OUT SIDE.

It was a nice day to go out side and pick up flowers/plants.
Ron took all the people who wanted to go out side and pick
flowers.
the kind of flowers that we pick were called
duck weed. it a small green plant .
We also picked other kinds of flowers
We picked wild grape
day lily
cattail

We found a snapping turtle
but it was dead
We found it next to the road
by the stream
Maybe it got run over
It was a very big snapping turtle
brown and had claws

I liked the outside a lot

Vu Co

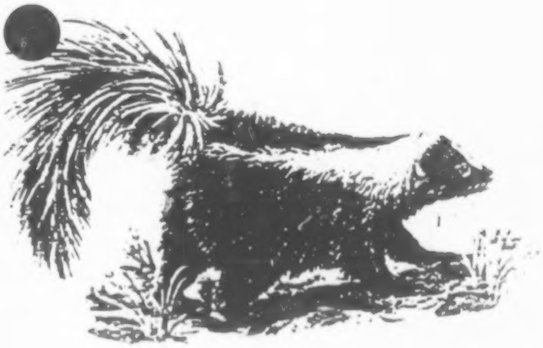
The cat has a baby like a human but the cat has more babies than a human. They take care of their babies like humans. The cat eats rice, food, and mice.

They have long tails. When the cat wants to catch something they have to use their claws. This kind of cat lives with people. It is a black color.

Leina Ye July 12.1990

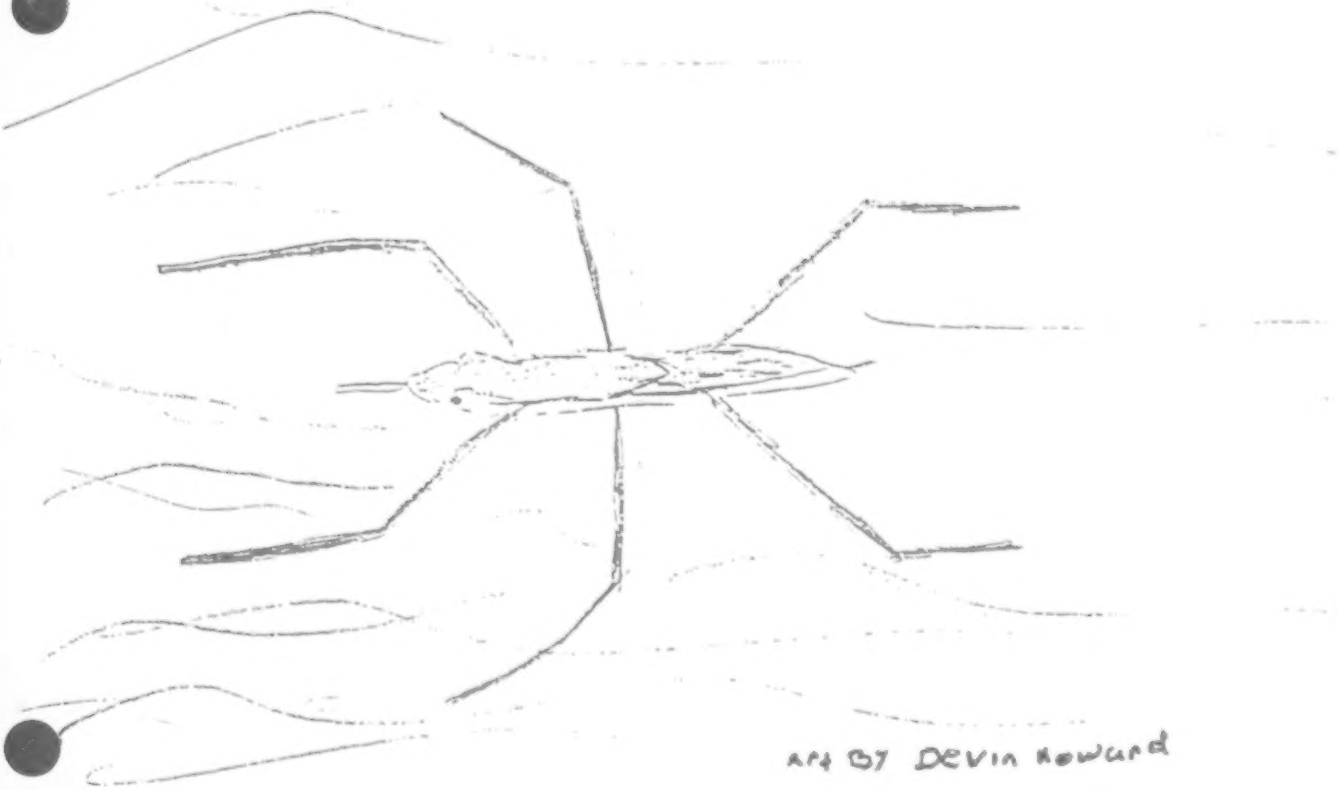
Striped Skunks have white facial stripe, neck patch, and V on back; mottle bushy tail. Their head and body are about 15-19 inches. They live in open forests, farmland, bushy areas, and praries, usually near water.

When the skunk feels scared it will spray a bad smell.



Lyle Terran

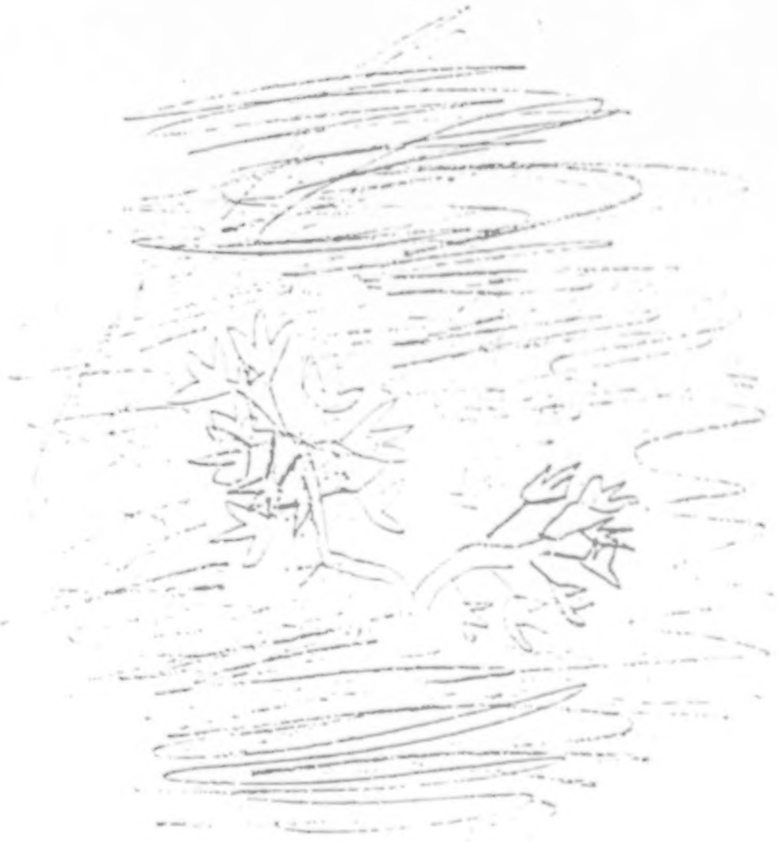
The water striders, taking advantange of surface tension on water, stay on the surface without breaking through. They skate along with remarkable speed. The water bugs are carnivorous. They eat other bugs. Water striders are often seen in large numbers running over the surface film of quiet ponds on long slender legs. I saw water striders in the stream next to Boynton. There was a lot of them, some were standing on top of the water, some were skating along the stream.



Art By Devin Howard

July 11.1190 Eric Parker

I drew this picture by the muddy stream near the railroad tracks across Route 13 from Boynton. It is a maple tree covered with Grape Ivy.



JULY 10 1990

We have some animals that are found near a stream. Two of our pets are not found around here but the others are all from the woods or streams near here.

I have a rabbit, a guinea pig. I have a frog. My sister has a salamander. My brother has another frog. We had a snake before but my mother didn't like it in the house. The African frog and the guinea pig are the two pets that are not from around here. We got the special frog from a friend and we got the guinea pig from a pet store.

The frog eats a special food because the frog is an African frog. Our friend gave us this frog but my brother's frog is an American frog that he found in the woods. The American frog eats insects that my brother finds. The food for the African frog comes from the pet store. It has to eat three little bottles in three days.

The rabbit is named Bobi. He and the guinea pig eat the same thing. Bobi goes outside and eats grass. He can come in and go out by himself. The guinea pig stays in her cage because she will run away if we let her outside.

We both love animals, especially snakes. When we grow up we want to have a Boa Constrictor. Once, Susanna held a Boa on her shoulder. The Boa eats live rats and mice.

Susana Barrero and Maria B.

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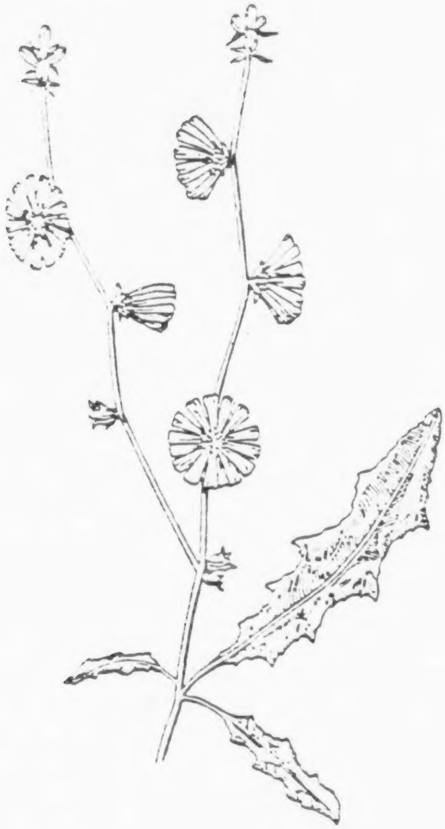
Chicory

Cicborium Intybus

by Patty Lee

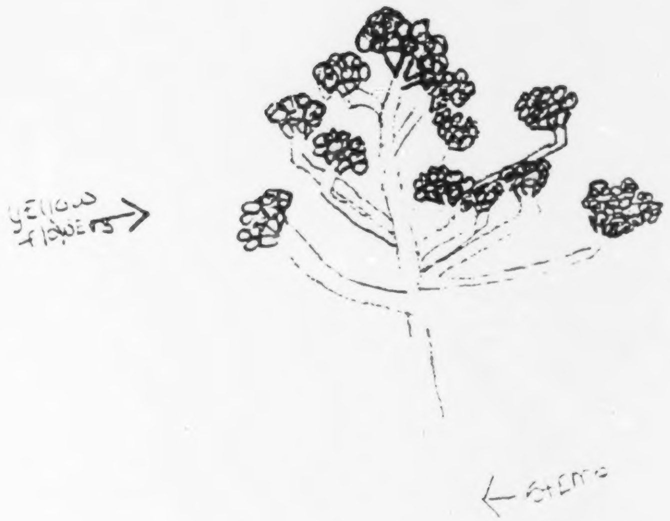
Chicory is also called succory. It's a popular wild flower in Europe and America. Chicory's flower can be blue, white, or rose-colored flower. The leaves are long, marrow, and have coarse teeth on their margins. Young chicory leaves can use to make salad. Old chicory leaves can be boiled and use as cooked vegetable.

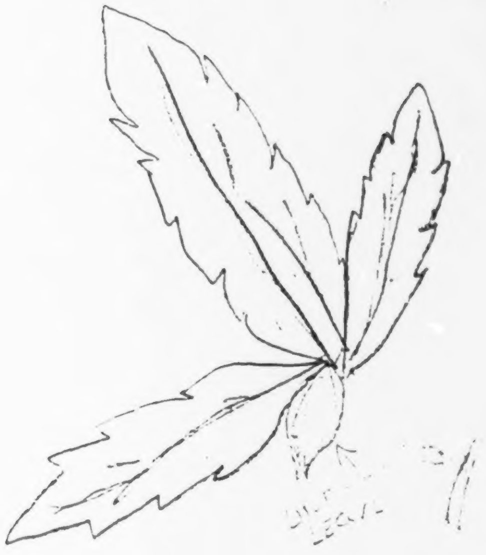


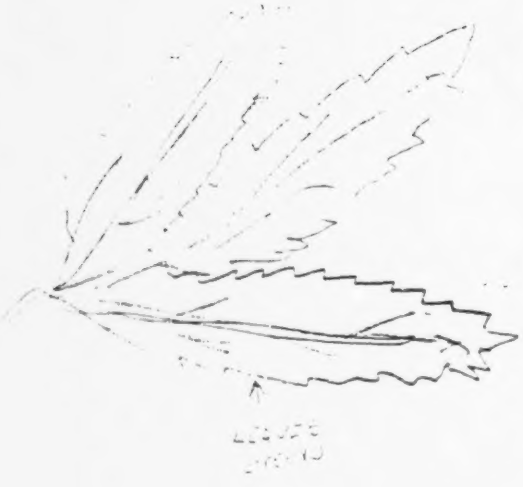
GOLDEN ALEXANDER

- People call it the Meadow Parsnip.
- They can be found in all the United States.
- They are also found in meadows, swamps and along streams.
- They can grow up to 3 feet high.
- This plant blossoms in July and June.

Lykeesa Jones


yellow flowers
stems





ang Tran July 11.1990

MY LIFE AS A DOG

One day my friends and I were going out to the park. The day was very hot. We were taking a walk. Suddenly it started to rain and I looked around me and all of my friends were gone and I was so scared.

The rain was getting harder and heavier. I tried to find a place to stay dry. But I couldn't find any place to go. After that I saw a bush. I thought the bush was okay but I didn't know what was inside of it.

I said to myself there is no other place to go. So I started to go inside but I was scared. But I had to go in before the storm came. I got in before the storm came.

I was so happy to be inside the bush because the storm was so hard and the thunder was so loud.

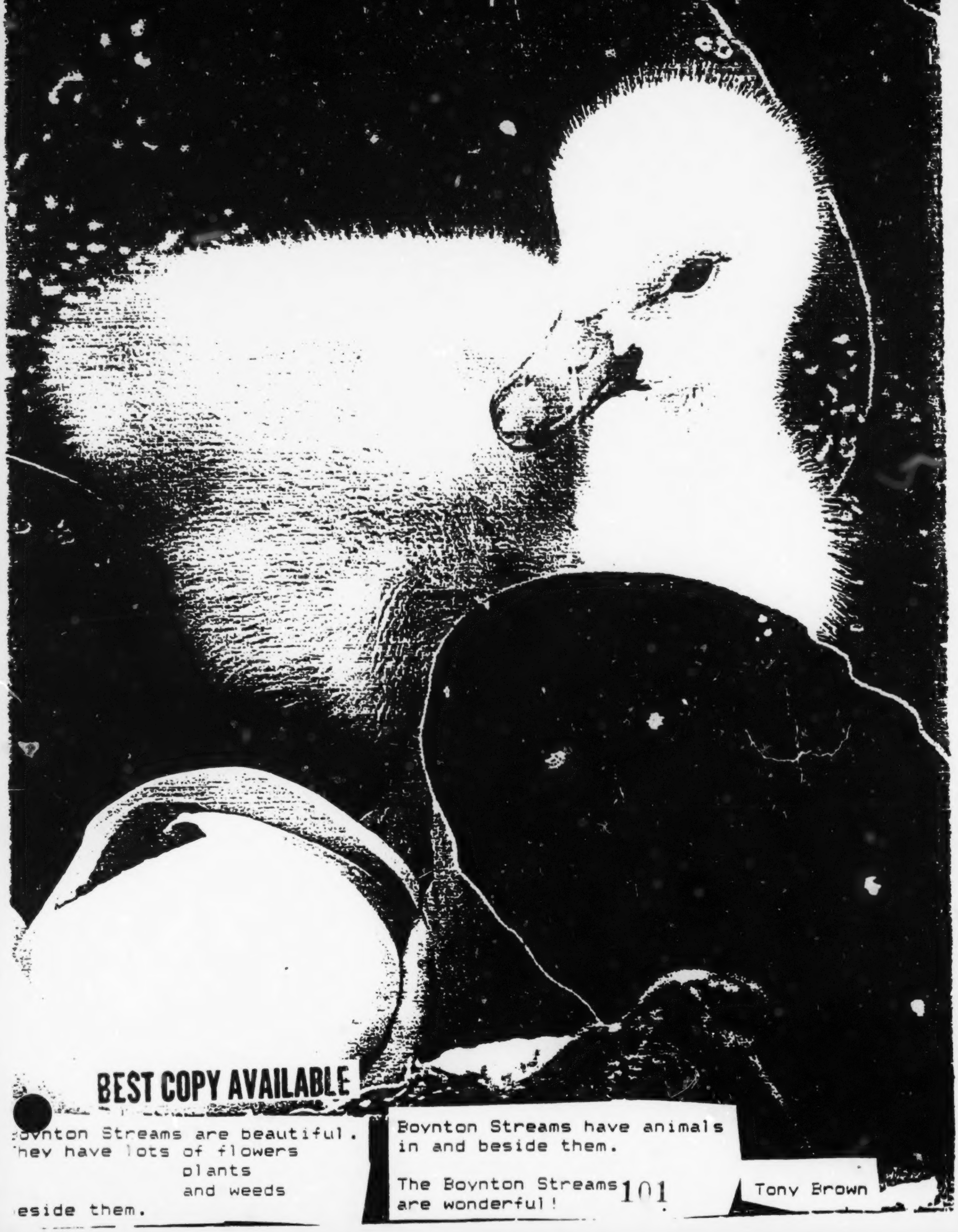
After that, the storm stopped and I went home. I saw my friends were playing and I was so mad because they left alone during the storm.

guided imagery

SANDRA OHADIKE JULY 12,1990

The American goldfinch is a well known bird.This well-known bird occurs throughout the United States mainly in S.Canada to S.Baja California.The American goldfinch breeds in the north and winters in the south.

The male goldfinch has a seasonal change of plumage.In the breeding season it mainly turns black and yellow. During winter it turns olive geen like the female goldfinch, but retains the white in the wings. In size it is a bit smaller than the European Goldfinch. It has a song rather like that of a canary.It is now protected in America. It is seldom seen in aviaries.It feeds on seeds,weeds and patches of thistle.



oynton Streams are beautiful.
hey have lots of flowers
plants
and weeds
eside them.

Boynton Streams have animals in and beside them.

The Boynton Streams are wonderful!

Tony Brown

Beyond Worksheets

Annotated Bibliography

Anderson, R.C., Hiebert, E., Scott, J., and Wilkinson, I.(1985) *Becoming a nation of readers: The report of the Commission on Reading*. Washington D.C.: National Institute of Education
This report examines recent research in the area of emergent literacy and makes several recommendations for instructional practice. Environmental influences on the acquisition of reading skills and the role of the teachers' professional knowledge are discussed in depth.

Ascher, Carol (1986) *Cooperative Learning in the Urban Classroom* ERIC/CUE Digest #30 August 1986
This article provides a short description of six cooperative learning techniques. A review of the research on cooperative learning is included, outlining the effects of this method on achievement, intergroup relations and student affect.

Baker, Andrea. (1990) *Educating at-risk youth: Practical tips for teachers*. Northwest Regional Educational Laboratory. Portland, OR
This is a collection of ideas for teachers to use working with students at risk of failure. More than 100 teachers were interviewed for this guide, which includes their ideas and the perspectives of at-risk students. The areas of curriculum, methodology, counseling, advocacy, community partnerships and transitions to the world of work are covered.

Brandt, Ron. (1990) *On Cooperative Learning: A Conversation with Spencer Kagan*. Educational Leadership. December 1989, January 1990.
The structural approach to cooperative learning, in which teachers are given ways of organizing classroom interaction rather than actual specific activities, is discussed in an interview format. Effects of this approach on behavior and comparisons with other cooperative education strategies are also discussed.

Bushman, John N.; Jones, Sandra. (1977) *Thematic Unit Planning: English and the Humanities*. University of Kansas.
The theory and practice of using thematic units in the teaching of language arts is discussed. Examples of actual thematic units are given, with associated objectives and suggested learning materials. Themes used include: the search for identity, the concept of brotherhood, the hero/heroine concept, and past and present roles and goals for women.

Conrad, Eva, et al. (1977) *A Peer Tutoring Resource Book*. Arizona University; Tuscon, Arizona.
This is a booklet of specific activities to use in peer tutoring. It is organized by curriculum area, and designed to be neither grade nor content-specific.

Crushon, Ilena J. (1977) *Peer Tutoring: A Strategy for Building on Cultural Strengths.* Center for New Schools, Inc.; Chicago, Illinois.
The use of peer tutoring as a way of building on the cultural norms of Black families is discussed. A peer tutoring program in an inner-city Chivcago elementary school is described.

Dermody, Margaret. (1988) *Metacognitive Strategies for Development of Reading Comprehension for Younger Children.* paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education; New Orleans, Louisiana.
This report describes a study of the differential effects of reciprocal teaching on students, based on their reading problems. Students with above average word recognition skills but poor reading comprehension had the highest increases as a result of this intervention.

Devin-Sheehan, Linda; Allen, Vernon L. (1975) *Peer Tutoring in One-Room Schools.* Wisconsin University; Madison, Wisconsin.
This paper reports the results of a survey of 110 teachers and 1,405 students of one-room schools. The extent of use of peer tutoring in these schools, tutor preferences for number of tutees, and gender issues are discussed.

Ehly, Stewart. (1977) *Peer Tutorial Models.* paper presented at the Annual International Convention of the Council for Exceptional Children, Atlanta, Georgia.
This paper discusses characteristics of effective peer tutoring programs. Three models for implementation of a peer tutoring programare discussed.

Gregg, Joan et al. (1980) *Thematic Unity and Collaborative Learning in Reading Remediation: A Social Science Model.* paper presented at the annual meeting of the Canadian Council of Teachers of English, Halifax, Canada.
The use of themes to impose meaningful organization on reading and social science and reading instruction is explored. Techniques for approaching various types of written materials are detailed.

Guthrie, L.F., Guthrie, G.P., van Heusden, S., Burns, R. (1989) *Principles of Effective Chapter 1 Programs: A Guidebook for Rural Educators.* Far West Laboratory. San Francisco: California.
This booklet is made up of two parts: five principles for planning and implementing a successful rural Chapter 1 program, and three in-depth descriptions of actual rural Chapter 1 programs.

Helmke and Schrader. (1988) *Successful student practice during seatwork: Efficient management and active supervision not enough.* Journal of Educational Research. November/December 1988 82:2.
The effective use of seatwork is discussed in this paper. The reasons for using seatwork activities are detailed, and potential problems of insufficient monitoring, insufficient preparation and ineffective management are explored. The importance of the teacher's diagnostic competence is emphasized.

Holder, Barbara; Lister, Bob. (1982) *Peer Tutoring. Resource Paper No. 13.* Task Force for the Improvement of Secondary Special Education; Concord, New Hampshire.
A successful peer tutoring model used by Portsmouth High School, New Hampshire, is described. The responsibilities of the tutor, the use of techniques to organize study, and advantages of peer tutoring are discussed.

Jachym, Allington and Broikou. (1989) *Estimating the cost of seatwork.* The Reading Teacher. October 1989.
The hidden costs of worksheets are estimated, based on a study of second grade classes. Administrators usually do not know how much it costs to use worksheets, and, although they are seen as a low-cost instructional activity, they can cost up to $100 per student per year. The extent of worksheet use is described. The authors point out that worksheets are often used to manage student behavior, rather than for a legitimate instructional purpose, and point to a lack of correlation between seatwork and achievement as reasons to examine the extensive use of this practice.

Kagan, Spencer. (1989) Cooperative Learning: Resources for Teachers. Laguna Niguel, CA: Resources for Teachers
This handbook covers the basics of cooperative learning and provides a number of methods for teachers to implement cooperative group work. The content-independent structural approach, the package approach and the learning together model are described. The applicability of the different models to different learning situations is explored in depth, along with considerations for classroom management and lesson management.

Kagan, Spencer. (1990) *The Structural Approach to Cooperative Learning.* Educational Leadership December, 1989, January 1990 47:4 p.12-15.
The use of various content-free cooperative group structures for use in the classroom is described. Domains within which various structures may be used are detailed.

Kaplan, Sandra N., et al. (1973) Change for Children. Pacific Palisades, CA: Goodyear Publishing Company, Inc.
Techniques for individualization of learning are presented in a step by step format. This book shows teachers how to create a classroom environment that stimulates individually tailored learning. It details how to create and use a learning center, how to plan classroom time and how to assess the outcomes of the instruction. The processes of "webbing" and peer tutoring are described, with activities for implementation in the classroom.

Kessens, Rosanna. (1983) *Themes.* Center for Teaching and Learning, North Dakota University, Grand Forks, North Dakota.
The use of themes to integrate curriculum areas is discussed. The process of "webbing" is described as a way of organizing teaching activities by themes.

Knapp, Michael S.; Turnbull, Brenda J. (1990) *Better Schooling for the Children of Poverty: Alternatives to Conventional Wisdom.* United States Department of Education; Washington D.C.
This is a summary of the first report of the Study of Academic Instruction for Disadvantaged Children. It lists a number of commonly accepted ideas central to compensatory education and alternatives to these ideas. It discusses standards for literacy and mathematics and the application of research findings to classroom practices.

Miller, Bruce. (1990) The Multigrade Classroom. Northwest Regional Educational Laboratory. Portland, OR.
This resource handbook for small, rural schools uses ideas from the field and research in the areas of classroom organization, classroom management and discipline, instruction organization and curriculum, instruction delivery and grouping of students, self-directed learning and peer tutoring.

Palinscar, Annemarie Sullivan. (1984) *Reciprocal Teaching: Working within the Zone of Proximal Development.* Paper presented at the annual meeting of the American Educational Research Association; New Orleans, Louisiana.
This study compared the effectiveness of reciprocal teaching: a process of modelling the strategies of summarizing, generating questions, predicting and clarifying while reading portions of text as a group. Results indicated that the use of these strategies was effective, and the effectiveness was enhanced by the use of "scaffolding" technique, in which the teacher models the use of the strategy and then prompts the students to demonstrate their use. Sample reciprocal teaching dialogue is included.

Palinscar, Annemarie Sullivan. (1987) *Collaborating for Collaborative Learning of Text Comprehension.* National Institute of Education; Washington, D.C.
This study investigated the effect of reciprocal teaching strategies when used in a cllaborative learning context with middle school students. Significant differences were found between control and experimental groups in recall of facts and in interpretation of material they read independently.

Risko, Victoria J.;Alvarez, Marino C. (1982) *Thematic Organizers: Application to Remedial Reading.* paper presented at the annual meeting of the American Reading Forum, Lido Beach, Florida.
This study explored the relationship between reading comprehension and the use of thematic organizers in pre-teaching with elementary, junior high school and college students. Results in dicated that the students in the theme pre-teach group had greater recall of the material taught and a better obverall understyanding of it.

Sharan, Yael, Sharan, Shlomo. (1989) *Group Investigation Expands Cooperative Learning.* Educational Leadership. December, 1989, January 1990 47:4 p.17-21.
A method of cooperative learning which expands the student's control of their learning is described. Most useful in the investigation of multifaceted topics, this method allows student to approach subjects from their own chosen aspects, which enhances their interest and motivation.

Shrum, Judith L. (1985) *The Integration of Modalities: Research and Instructional Implications.* Virginia Tech, Blacksburg, Virginia.
This report describes a study of the influence of preferred learning modality on the acquistion of a second language. It is suggested that teachers assess and take into account the preferred modality (visual, auditory or kinesthetic) of the student in presenting material, consider a possible mismatch of modes between teacher and student when problems occur, consider reteaching in different modes and vary modes from day to day, or lesson to lesson.

Slavin, Robert E. (1987) *Cooperative Learning: Student Teams.* National Education Association of the United States, 1987
This booklet describes the use of student teams in cooperative learning. It describes seven models of student team learning: Student Team Achievement Divisions, Cooperative Integrated Reading and Composition, Jigsaw, Teams-Games-Tournament, Learning Together, Team Assisted Individualization and Group Investigation, followed by interpretations of research results.